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ASSESSMENT OF SKILLS AND COMPETENCIES OF ACADEMIC LIBRARIANS FOR SCHOLARLY COMMUNICATION: A CASE OF PRIVATE UNIVERSITIES IN THE GREATER ACCRA REGION OF GHANA

BY

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JULY 2019
DECLARATION

I Andy Adu – Sarbeng, the author of this thesis do hereby declare that, except for the references made to other scholars, which references are duly acknowledged, this is my original work produced under the supervision of Prof. A.A. Alemna and Dr. De-Graft Johnson Dei.

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DEDICATION

This thesis is dedicated to my parents, Mr. and Mrs. Adu – Sarbeng for investing heavily in my education and encouraging me to move higher. May God bless them abundantly.
ACKNOWLEDGEMENT

First and foremost, I would like to thank my Supervisors, Prof. A. A. Alemna and Dr. De-Graft Johnson Dei for their patience, interest and guidance given to me right from the choice of topic and throughout the various stages to the completion of this thesis.

I’m also grateful to my parents for their assistance, words of encouragements and prayers. Also, to my siblings, Phyllis and Teddy, I say God bless you for your unflinching support. I also would like to say a very big thank you to Kaakyire Asiraa Gyasi for her immense support and contributions.

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ABSTRACT

The last decade or two has witnessed the rise in the setting up of private tertiary education in Ghana, most of which are set up in the Greater Accra Region of Ghana. These private institutions are attached to their respective academic libraries which support the teaching, learning and research need of the institutions. Since these institutions are that of higher learning, it is imperative that their librarians develop high level of knowledge and skills in the major areas of scholarly communication so that they can contribute meaningfully to the research processes and activities in their respective institutions.

This study adopted both exploratory and quantitative methods. In all, thirty academic librarians from various private universities were selected as the population of the study. The instrument used to collect data was the questionnaire. The questionnaires were personally distributed to the respondents by the researcher. The Statistical Package for Social Sciences (SPSS) was used to analyze the data collected from the study.

The study revealed that academic librarians of the Private Universities play critical roles in academic research which include increasing access to information, promoting information literacy, institutional repository management, ensuring copyright compliance among others. It was also discovered that librarians of the private universities have intermediate level knowledge on the various practices under research data management. Formal education was found to be the most effective mode of training librarians.

Recommendations made based on the findings of the study include advocacy and training of librarians, development of robust and sustainable methods of identifying training needs of librarians and the formation of a proactive and collaborative unit by the librarians to exchange knowledge and expertise.
CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The advent of computers and its associated technologies in the 21st century have gone a long way to affect all aspects of the existence of man. The pace at which technology has been deployed has led to massive changes in the traditional ways of doing things.

In academia and other fields as well, the nature of conducting research have also changed drastically as the use of technology has been employed. Auckland (2012) opines that, not only has research environments become very competitive, but much higher quantities of data are being generated than previously. Auckland (2012) further stipulates that as research evolves, so must research support. This according to Sanjeeva and Powdwal (2018:1) is due to the fact that digital technologies have thrown up a “plethora of novel options for communicating and establishing scholarship”. Sanjeeva and Powdwal (2018) further stated that, along the enormous options that technology provide comes the challenge of researchers to cope with the rapid pace of these changes.

The term ‘scholarly communication’ has been defined in various ways. A single definition of the term has therefore become very difficult (Mukherjee, 2009). According to Rowland, Nichols and Huntington (2004), the term is most often than not, explained to include only literature which have been peer-reviewed and published upon completion of a research. Borgman (2000) offers a very simple definition of the term. He states that scholarly communication refers to “the study of how scholars in any field use and disseminate information through formal and informal channels”. According to the Association of Research Libraries (2014), scholarly communication
“is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community and preserved for future use”. UNESCO (2015:6), also defines scholarly communication as “the process of sharing, disseminating and publishing research findings of academics and researchers so that the generated academic contents are made available to the global academic communities”.

Libraries play a very important role in the research process and as a result, provide proactive solutions to changing trends in the field. In the case of academic and research libraries it has even become imperative for developing trends to be given optimum priority so that appropriate responses can be given to them (Sanjeeva and Powdwal, 2018). These developments have become very important as user needs and expectations continue to grow.

According to Christensen – Dalsgaard, Grim, Berg, Hortsmann, Jansen, Pollard, Roos (2012), for academic libraries to ensure that they continue to stay relevant, rigorous attempts must be made at diversifying into what they term as ‘dedicated research support’. Schmidt, Kutchma, Calarco, Shearer (2016) subsequently opine that there is an urgent need for a new type of workforce. They continue to add that competencies and skills of emerging staff must therefore be put under intense scrutiny in order to ensure that they measure up to the standards required to adequately serve the information needs of various academic libraries.

The term competency has been defined by various authorities in different ways. The European e-Competence Framework (2014), defines competence as a “demonstrated ability to apply knowledge, skills, and attitudes to achieve observable results”. Per this definition, it will suffice to say that skills are embedded in competencies. While skills are precise abilities, competencies are rather holistic. According to Okoye (2013), the skills, understanding, knowledge and
attitudes which enable a person to effectively perform a task are considered competencies. UNICEF (2018), define competencies “as a package of behaviors that is necessary to deliver the benchmark outcomes”. Simply put, competency is the ability to proficiently and effectively accomplish a task.

Acquisition of digital skills by librarians have therefore become imperative in the quest for development of scholarly communication. Digital skills have been defined differently by different authors. Trepanier (2012), defined it as a person’s ability to use computer hardware and software as well as other digital information systems to appropriately apply security measures and safeguard digital information. Chinien and Boutin (2011), also associate digital skills with a person’s ability to employ digital tools and also work in a computerized environment.

Moreover, according to Sanjeeva and Powdwal (2018:2), digital scholarship in modern times demands that researchers dive deep into a very sophisticated research and publication world. They state that research and academic libraries have been prompted to take a look again at their roles in the midst of the altered and complex nature of the research environment they find themselves in. In order for these librarians to be at the helm of affairs in this research process, then there is the ever – pressing need for them to take up new roles which “require developing new skills and competencies”.

1.2 STATEMENT OF THE PROBLEM

Rapid technological changes and advancement in modern times have immensely impacted the way research and scholarly communication is done. The roles of various libraries have therefore been affected as a result of the aforementioned changes. For instance, various libraries all over the world in order to properly serve the diverse needs of their patrons, have had to adopt new and
improved services which hitherto was not the case. According to Schmidt et al (2016), some of the changes which libraries worldwide have had to make include but not limited to the following “development of research data management plans, hosting collaborative virtual research environments, managing institutional repositories and disseminating research outputs through open access mechanisms”

Libraries all over the world today find themselves leading the charge in this era of digital transformation as well as digital information infrastructures. There has therefore been an urgent need to revisit or revise how information and knowledge are engaged. Conscious efforts must be made at ‘identifying emerging specialty roles as well as collaboratively preparing series of service areas and competency profiles for the support of research data management, scholarly communication and open access, digital curation and preservation and support for digital scholarship’ (Schmidt et al, 2016).

A cursory look at various literature reveals that various skills and competencies have been identified as being crucial in order for academic librarians to survive in this digital era. Listing the core competencies required by academic librarians, the task force of North American Special Interest Group (NASIG) proposed the toolbox, associated with scholarly communication and divided it into the following areas:

1. Institutional Repository Management
2. Publishing Services
3. Copyright Services
4. Data Management Services
5. Assessment and Impact Metrics

A number of studies have been conducted on the skills and competencies of academic libraries worldwide. These include studies by Choi and Rasmussen (2009) and Nonthacumjane (2011) who did content analysis of job advertisements in the United States and key competencies required by librarians in both Norway and Thailand respectively. Both studies found out that a good knowledge and understanding of metadata, experience in digital content creation and management is required for library and information science to survive in this digitally oriented environment as well as generic skills such as effective communication and interpersonal skills, critical thinking, problem solving and team work.

In Ghana, Barfi (2017) and Somuah (2013) also conducted studies on the development of academic research ethics and digital skills of library staff of some public tertiary institutions. Both studies found out that the development of appropriate research ethics as well as the development of digital skills is key for academic librarians in supporting scholarly communication. However, a further review of literature revealed that almost nothing has been done in relation to the skills and competencies of librarians of private universities in Ghana. This study therefore sought to investigate the competencies and skills set of academic librarians in some selected private universities in Ghana.

1.3 PURPOSE OF THE STUDY

The purpose of the study was to identify the core competencies and skills set which academic librarians ought to have in order to provide the appropriate support for scholarly communication.

1.4 OBJECTIVES OF THE STUDY

The specific objectives of the study were:
1. To identify the core competencies and skill sets which academic librarians should have in order to provide adequate research support and support scholarly communication.

2. To examine academic librarians’ level of proficiency of the skills and competencies needed for scholarly communication.

3. To examine the ways in which library and information science professionals in higher education updated their skills and competencies.

4. To ascertain the training needs of the library and information professionals in the area of scholarly communication.

5. To make recommendations based on the findings of the study.

1.5 THEORETICAL PERSPECTIVE

The study was guided by the theory of The System of Professions which was developed by Abbott (1988). The System of Professions argues that professions establish jurisdiction over particular work tasks. Professions interact with one another in order to establish, negotiate, and/or seize ownership of professional tasks from one another. The relationships between professions via these interactions create a system from otherwise separate and distinct professions. Like other systems, the System of Professions is vulnerable to disturbances that may be initiated internally within the system or externally from the system. These disturbances, in turn, may set in motion contests for jurisdiction between professions; contests that may result in the development of a new profession, the demise of an existing profession, or the evolution of an existing profession. In particular, external disturbances are more likely than internal disturbances to influence the development of new professions. Technology is one such external disturbance (Abbott 1988). Abbott’s theory of the System of Professions, the theoretical framework for this research, provides a context in which to examine the developments in modern librarianship,
particularly the competencies necessary to adequately perform the tasks over which librarianship has jurisdiction. It provides a lens through which to examine changes in the work of this profession within the system of information professions and through which to examine changes in the competencies required to successfully conduct the work.

Changes in technology are at the heart of the development of modern librarianship as a profession. It is apparent in the literature that technological developments have impacted the way librarians go about their work, from the development of institutional repositories and open access, research data management and all other components of scholarly communication. These impacts of technology require an equal development of related competencies and skills set which will enable the librarians to fully have control over their jurisdiction. This research will seek to examine competencies of academic librarians with regard to the new technologies in the area of scholarly communication.

1.6 SCOPE AND LIMITATIONS OF THE STUDY

The study sought to examine the appropriate skills and competencies of academic librarians of selected private universities within the Greater Accra region of Ghana. The Greater Accra region was chosen for the study because a lot of the private tertiary institutions in the country are found in this region.

1.7 SIGNIFICANCE OF THE STUDY

The study would be significant because it highlights the requisite skills and competency profiles which 21st century academic librarians must possess in order to contribute meaningfully to scientific research. The findings of the study will add to the body of literature on the subject matter. Moreover, the findings of the study will inform stakeholders such as faculties and other
groups in the development of appropriate training programmes which will update the skills of librarians in general.

1.8 ORGANISATION OF CHAPTERS

The study will be organized into six different chapters:

**Chapter 1:** This chapter is the introduction of the study which consist of background to the study, statement of the problem, purpose of the study, objectives, theoretical framework, scope/limitations of the study, significance of the study, ethical considerations of the study and organization of the chapters of the study.

**Chapter 2:** This chapter reviewed literatures which are relevant to the study.

**Chapter 3:** This chapter dealt with the methodology of the study which included the research design, selection of case, selection of subjects, data collection instruments and presentation of data.

**Chapter 4:** This chapter contained the analysis and interpretations of the findings of the study.

**Chapter 5:** This chapter dealt with discussion of the findings of the study.

**Chapter 6:** This chapter consisted of summary of the findings, conclusion and recommendations based on the findings of the study.
CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter examines available literature on the subject of scholarly communication, its various components, as well as the roles and responsibilities of librarians in promoting it. Literature is reviewed in line with the objectives of the study under the following headings:

2.2 The concept of scholarly communication and its changing scenarios

2.3 The need for skills and competencies development for scholarly communication

2.4 Issues affecting scholarly communication

2.5 Institutional repository management

2.6 Library publishing services

2.7 Copyright services

2.8 Research data management

2.9 Assessment and impact metrics

2.2 THE CONCEPT OF SCHOLARLY COMMUNICATION AND ITS CHANGING SCENARIOS

The term ‘scholarly communication’ has been defined in various ways by different authorities. A single definition of the term has therefore become very difficult (Mukherjee, 2009). According to Rowland, Nichols and Huntington (2004), the term is most often than not, explained to include only literature which have been peer-reviewed and published upon completion of the research. Borgman (2000) offers a very simple definition of the term. He states that scholarly communication refers to “the study of how scholars in any field use and disseminate information through formal and informal channels”.


According to the Association of Research Libraries (2014), scholarly communication “is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community and preserved for future use”. UNESCO (2015:6), also defines scholarly communication as “the process of sharing, disseminating and publishing research findings of academics and researchers so that the generated academic contents are made available to the global academic communities”.

The study of the concept of scholarly communication comprises the advancement in the generation of scholarly information, the connections and interactions between various areas of research and disciplines, the information needs as well as the information use by individuals and user groups, and the relationships between formal and informal means of communication.

Scholarly communication can also be said to be the means through which academic information is distributed from the creators of the information, who in this case are the authors, to the users of the information, through various intermediaries such as libraries and publishers. Scholarly communication can be seen as a process in which research results are made available through publication and preservation. According to Peek and Pomerantz (1998), the advent and use of computers in communication has redefined scholarly communication. Modern day scholarly electronic communication consists of the distribution of, research papers, articles, and messages by electronic means as opposed to their distribution in traditional print format. Lyman and Chodorow (1998) declare that scholarly communication begun when the use of computers and other information technologies became more prominent in scholarly research. They observe that scholarly communication is a term designed to put together both print publication and digital communication in a single functional scheme.
The Association of College and Research Libraries (ACRL), in 2010, admitted that scholarly communication has become a top trend in academic librarianship, as a result of some developments in the field. These developments include, growth in open access, growth of locally-created digital collections, increase in the complexity of licensing issues etc. In responding to these developments, most libraries have formed new positions or have revised existing ones to focus more on scholarly communication. Bonn (2014), echoed these sentiments when he stated that scholarly communication competencies are progressively being required at two major levels in research and academic libraries. First and foremost, many academic libraries are coming up with specialist positions for professional practitioners who will take the lead in the development of programs and services to support scholarly communication. Secondly, there is an increased expectation that librarians who support disciplinary scholarship are fluent in the language of scholarly communication and can address its opportunities and challenges. All these developments have made scholarly communication literacy become a core competency for academic librarians in this 21st century.

The evolution of the responsibilities libraries play in the process of scholarly communication is most often looked at in the context of the relationships libraries have with projects of faculty as well as the trends in technology and the ever changing practices of scholarly communication. (Vandergrift & Varner, 2013). According to Kirchner (2009), managers of academic libraries must create new and separate departments to carry the responsibilities of scholarly communication. This will ensure that various activities of scholarly communication are properly and adequately taken care of. Thomas (2013) however, states that this has not been the case. He states that the roles academic libraries play in the scholarly communication process has been distributed among existing departments rather than creating new ones. He further go on to say
that in institutions that are smaller, these roles are more likely to be held by a single person rather than a dedicated unit.

Librarians’ duties in scholarly communication take several forms. They include scholarly publishing services, copyright and open access advocacy, scholarly resource assessment, data management, collection development, copyright advising, or information literacy (Calarco & Ruttenberg, 2014),

According to Finlay, Tsou and Sugimoto (2015), although a majority of academic libraries all over the world are striving to assign scholarly communication duties to existing departments, or coming up with an entirely new scholarly communication librarian offices, most library schools around the world seem not to be making corresponding changes to their curricular.

According to Cross and Edwards (2011), there has been a monumental rise in job openings which require applicants to have knowledge and understanding of scholarly communication as well as the capacity to implement various initiatives with regards to scholarly communication. They go on to say that it becomes very shocking to realize that schools of information and library science have not adequately integrated and implemented scholarly communication as a major component of their curricular. According to their survey, 73% of library schools which have been accredited by the ALA provide some form of legal education but the majority provide close to no tuition on scholarly communication. Moreover, a survey by Simmons and Richardson (2012), states that 83% of the staff and librarians who operate various institutional repositories of various academic libraries have not gone through any form of formal training which is repository-focused.
2.3 THE NEED FOR SKILLS AND COMPETENCIES DEVELOPMENT FOR SCHOLARLY COMMUNICATION

The dawn of the 21st century has brought with it many challenges to libraries and information professionals as a whole. Issues such as the advent of information and communication technology, shrinking budgets of libraries, open access, data curation, research data management, digital archives management as well as a host of other issues have made it imperative for librarians generally to re-examine their skill sets in order to better serve their clientele (Smith, Hurd, Schmidt, 2013). In the view of Khan and Bhatti (2017), for librarians to successfully and adequately surmount the challenges of today’s digital environment, there is the need for them to acquire new skills which commensurate with these modern changes.

The term competency has been defined by various authorities in different ways. The European e-Competence Framework (2014), defines competence as “demonstrated ability to apply knowledge, skills, and attitudes to achieve observable results”. Per this definition, it will suffice to say that skills are embedded in competencies. While skills are precise abilities, competencies are rather holistic. According to Okoye (2013), the skills, understanding, knowledge and attitudes which enable a person to effectively perform a task are considered competencies. UNICEF (2018), defines competencies “as a package of behaviors that is necessary to deliver the benchmark outcomes”. Simply put, competency is the ability to proficiently and effectively accomplish a task.

Acquisition of digital skills by librarians have therefore become imperative in the quest for development of scholarly communication. Digital skills have been defined differently by different authors. Trepanier (2012), defined it as a person’s ability to use computer hardware and software as well as other digital information systems to appropriately apply security measures
and safeguard digital information. Chinien and Boutin (2011), also associate digital skills with a person’s ability to employ digital tools and also work in a computerized environment.

According to Fisher (2001), the competencies of librarians can be categorized into professional, personal, and education competencies. According to him, personal competencies have to do with a person’s behavior, character and mind set. Professional competencies also encompass the skills and knowledge a person has about the work.

According to Sanjeeva and Powdwal (2018), due to the constant changes and shifts in user needs and expectations, libraries and librarians are being forced to reinvent themselves in order to meet these expectations. They further state that, in the process of conducting research, the university library play a very central role so there is the need for academic libraries to continuously develop new trends to adequately provide research support.

Moreover, Bresnahan and Johnson (2013) state that, the needs of researchers always have a direct effect on the type of services or research support librarians and libraries provide. They go on to say that libraries have traditionally supported research through the provision of collections and also by organizing information literacy programs. However, with the advent of ICT, the interaction between libraries/librarians and researchers have changed drastically thereby significantly expanding the traditional roles of librarians. New initiatives such as open access, research data management, copyright services, publishing services, new ways of disseminating the findings of research among others have revolutionized the type of research support libraries offer to researchers and other library clientele (Association of Research Libraries, 2012; Buehder and Boateng, 2005; Auckland, 2002).
Auckland (2012), emphasized the need for librarians to consciously imbibe new skills and also develop relevant expertise in new areas. These assertions therefore mean that academic librarians who do not possess the requisite skills or the needed experience and exposure to these current trends in the provision of research support would have to be re-skilled or trained either internally or externally.

Libraries which have the luxury to send their staff to external professional development programs must do so in order to allow their staff have maximum exposures to the new technologies as well as the skill sets which they require in order to adequately and appropriately satisfy the information needs of researchers. These professional development programmes could take the form of conferences, workshops, seminars, webinars or even formal classroom work.

However in some cases, not all libraries are able to gather the needed resources to send their staff out to be trained externally (Merrill and Lindsay, 2009). In such cases, internal training methods could be adopted. According to Bresnahan and Johnson (2013), internal training strategies differ significantly in scale and scope.

In order for training to be effective, be it internal or external initiative, needs assessment ought to be done. According Goldstein and Ford (2002:79), this assessment “provides critical information for designing and evaluating a training program”. This means that apart from the fact that these assessments help to identify knowledge and skills gaps, present in a particular academic library, they also contribute to the development of training programs which are evidenced-based.

According to Parry (1991), there are several factors which can influence the content and even how the assessment is designed. These factors include “appraisal of current skills, anticipated training needs, and training priorities in the context of the overall mission of the library”.

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Farooq et al (2016), state that for the librarianship profession to adequately tackle the complex information needs of the 21st century, a whole new level or dimensions of skills set is needed in order for the profession to have a distinct nature. Gerolimos et al (2015), state that librarianship is not just an art but it is fast becoming a science as well. As a result of this, to be able to better manage the administration of information, such skills which include communication skills and other technical abilities must be developed. Farooq et al (2016) further state that expectations from academia on academic librarians are very huge. Academic librarians are expected to adequately support the teaching and learning as well as research programs. These massive expectations expressly require academic librarians to hone their skills and competencies in order to shoulder their responsibilities. They further go on to state that these massive changes and expectations on academic librarians equally demand new ways of learning and methods of preparing or training academic librarians. These new methods will equip them to be able to work in a constant changing and complex information landscape.

2.4 ISSUES AFFECTING SCHOLARLY COMMUNICATION

The scholarly communication landscape in recent times have been marked with lots of turmoil and confusion (Venkadesan, 2009; Duncan et al, 2006). According to Webster (2015), “the current scholarly communication is unsustainable”. He goes on further to enumerate reasons to substantiate the claims. He says that there has been an increase in the commercialization of scientific and research data and the control of this information has been put in the hands of organizations whose interest conflict with that of various research libraries. The positioning of these organizations enable them to exploit these research and scientific data for commercial gain. The situation described above, most often than not overwhelm the noble efforts of research libraries in their attempts to use their limited resources to purchase materials for their users.
Keeping up with these price changes mostly becomes impossible. This often end up in drastic decline in the number of titles which can be made available to support research, teaching and learning. Traditional methods of creating, publishing, distributing and using scholarly information is going through drastic transformation. Unlike before when libraries actually owned very important information resources, now, the same libraries cannot own these same resources again but rather only rent access to them for a limited time only. Issues of consistent access must therefore be addressed.

Duncan et al (2006) also states that, due to the continuously drastic increase in the cost of serials, academic libraries all over the world continue to cancel subscriptions to journals in order for them to stay within their resource allocations.

According to Lynch (2013), the current scholarly communication landscape is besieged with highly entrenched conflict of interest between the various stakeholders involved. The inability to balance these interests which are conflicting keep working to negatively affect scholarly communication. Lynch (2013) explains that, the scholarly communication field is a multi-billion-dollar venture, therefore, various players in the field including academic publishers and attorneys alike are slow and extremely modest in trying to appropriately balance the system because of their parochial interests.

Again, another issue which affects scholarly communication is the changing knowledge needs of societies at large. The quality of every society is dependent on the quality of research the society is able to conduct in all fields of endeavor. Over the years, the knowledge needs of various societies have influenced the whole landscape of scholarly communication. Scholars now rely on
these scholarly communication system to provide them with the requisite resources in order to aid them advance the frontiers of knowledge and also to improve the quality of life in general.

In the view of Shearer and Birdsall (2002), copyright, intellectual property and licensing are also issues which affects scholarly communication. According to them, the historical precedents which had set the rule through which publishers, researchers, libraries and all other stakeholders hitherto disseminated information, has been revolutionized by electronic publishing. Now, as a result of electronic publishing, information can be disseminated to a very wide audience in diverse formats. Even though this occurrence sounds interesting, it has its economic as well as intellectual property and copyright issues. This is inherent in the fact that digital-borne information can easily be reproduced at no cost at a very high speed without the quality of the information being affected. Presenting information in digital formats has become extremely unattractive for researchers and distributors alike.

Furthermore, in order for digital information to be distributed among a wide variety of users, the software architecture on which the system runs must be interoperable. This is because scholarly communication mostly rely on modern technological protocols to disseminate information across a wide spectrum of audience. This incident however faces challenges sometimes because the existing protocols for accessing and retrieving information poses technical problems.

Also, on access and retrieval of information, there are a lot of problems or issues which require critical research and innovative ideas to deal with them. According to Shearer and Birdsall (2002), the tremendous shifts in the traditional roles of scholarly communication landscape has led to some questions which needs to be critically answered by all stakeholders involved. Some of the questions include but not limited to the following: whose role is it to provide access? What
authentication and encryption systems are required? What user interface meets the needs of different types of users? What techniques of information retrieval is most effective. These are very vital questions which must be investigated especially if digital scholarly communication is to last for a very long time to come.

Another issue Shearer and Birdsall (2002) bring to the fore with regards to issues of scholarly communication has to do with preservation of documents or information resources. This current dispensation have seen the amount of digital information resources rising steadily at an unprecedented rate. The complex responsibility of preserving and providing access to these resources is in the library which hitherto provided these services to only paper-based materials. As a result, all stakeholders in the scholarly communication landscape must take up responsibilities of ensuring that digital information resources are properly maintained over a long period of time. Shearer and Birdsall (2002) further state in doing this, some issues need to be addressed which include:

1. Maintaining resources which run on temporary platforms.
2. Long-term preservation of materials that are not necessarily owned by the library.
3. Development of digital preservation policy that will guide the preservation of all digital information resources including the lifespan of all digital information resources including the lifespan of the various infrastructure which creates the resources.

2.5 INSTITUTIONAL REPOSITORY MANAGEMENT

Institutional repositories have been defined by various authorities in different ways. According to Murugathas and Balasooriya (2014:39), “an institutional repository is a digital collection of an institution’s intellectual output. It is a new model for storing research output of a given
institution.” Lynch (2003), defines a university’s institutional repository as a set of services that a university provides to the members of its community for the management and dissemination of digital materials created by the institution and its community. In the view of Crow (2002), an institutional repository is a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside of the institution with few if any barriers to access.

Institutional repositories are databases which are mostly accessible using internet connectivity. They are set up to provide essential information management tasks which include capturing, storing, indexing, preserving and disseminating the intellectual output of an institution in digital formats. Institutional repositories can therefore be said to be a tool used to collect, store and disseminate information. Institutional repositories can be considered as a natural extension of an academic institution (Murugathas and Balasooriya, 2014).

Conventional methods of disseminating research findings through subscription based journals is very much limited in terms of its potential impact than the new methods of publication of the same research in open access repositories. The conventional scholarly communication of journals limits, rather than expands the readership and availability of most scholarly research. Rounds of journal price increases and subsequent subscription cancellations act to reduce the audience further. In this context, the role of the institutional repository can break monopolies of the journal publishers and increasing the awareness of institutions intellectual output.

Institutional repositories have the following benefits: even though subscription based journals provide readership and access to thousands if not millions of intellectual and research works of various institutions, institutional repositories also provide a centralized storage space for all
intellectual materials produced by a specific institution. The materials which institutional repositories store include published and unpublished works on areas of research which are considered grey. This makes it easier to exhibit the social, scientific and academic value of the institution.

Also, institutional repositories serve as efficient and effective marketing tools. This is because the quality of the institutions’ intellectual output is showcased to potential stakeholders who include funding and donor agencies, students, researchers and other staff. The image of the institution involved is therefore projected in a positive light to the outside world.

Moreover, Crow (2002) states that institutional repositories provide concrete pointers of an institution’s quality therefore increasing the prestige, value and worldwide visibility of the institution.

Institutional repositories also serve as an assessment tool for research by management of various institutions. This is because in assessing the research process, the repository can serve as a base layer against which the performance of conducting research can be measured. The success of an institution is to an extent judged by the volume and quality of research output. Research outputs are part of the product of a university (Holland & Denning, 2011).

Institutional repositories serve as an evaluation tool for management. With it, management are able to evaluate the performance of the research output of their staff as well as researchers. It also standardizes the records which are produced by institutions. Also, long term preservation of intellectual works of institutions is also ensured. Last but not the least, institutional repository can also contribute to a favorable ranking of an institution especially in a ranking system which is based on presence and visibility on the web.
Considering all the benefits discussed above, it can be said that institutional repositories have essential contributions towards the general growth and development of any academic institution. Moreover considering the strain on the budgets of academic libraries in recent times, most of them, without regards to the size of their institutions are open to embrace the idea of an open-source institutional repository as a cost effective way of engaging in scholarly communication initiatives (Hashim & Jan, 2011).

2.5.1 CHALLENGES OF ADOPTING INSTITUTIONAL REPOSITORIES

When it comes to the development and implementation of Institutional Repositories, there are a host of challenges too. Some of them are discussed below:

The development and growth of IRs has been beset with some persistent hurdles. For instance, issues like policies of publishers on self-archiving, legitimate versions for archiving, and license agreements have created what has been referred to as “information gaps” amongst IR adopters (Hanlon & Ramirez, 2011: 688). Furthermore, Duranti, (2010), raises the recurrent issue about technological factors. He stated that the ability of operators of various IRs to keep various equipment used in IR operations consistently and permanently operational even in this era of rapid technological advancement is a very big issue. Equipment and gadgets used to access the content of digital materials now could be obsolete in the next few years thereby presenting challenges to the issue of access to the contents of such materials. Moreover, there could be lack of cooperation on the part of faculty to contribute to the success of the repository by helping to populate it despite a library’s promotion of its IR. Casey (2011) states that some of the barriers to faculty involvement has to do with untenured faculty being cautious of issues associated with plagiarism in relation to depositing work into an IR, while Davis and Connolly (2007) also state
that some faculty have also expressed uncertainty regarding copyright agreements with publishers.

Academic librarians most often than not, contribute significantly in the development, management and advocacy of IRs. In the development of any IR, a good understanding of the goals of the repository and the ability to adequately express such goals is extremely significant on the part of the academic librarian. Academic librarians must also be very conversant with regards to best practices for IR content generation and their descriptions as well. Academic librarians should also be capable and abreast with the management of the technical infrastructure that supports the repository. “The depth of understanding of the latter will depend on the organizational structure of the institution and the degree to which the academic librarian is responsible for the technical management of the institutional repository” (NASIG, 2017:4).

2.5.2 CORE COMPETENCIES OF INSTITUTIONAL REPOSITORY MANAGEMENT

Core competencies in the area of institutional repository management as outlined by the National American Serials Interest Group, NASIG (2017), include but not limited to the following:

2.5.2.1 Collect, store, and preserve faculty, staff, and student intellectual output

A scholarly communication librarian must possess a firm understanding of the research strength of the university as well as the learning outcomes of the students who they serve. They must be able to establish good relationships throughout campus and also strategically align the goals of the institutional repository with that of the researchers of the institution. This will endear them to the IR which in the long run, will bode well for the sustainability of the initiative.
2.5.2.2 Knowledge of and ability to apply publisher policies on archiving

A good knowledge and understanding of copyright issues, especially archiving policies of publishers is very key to the management of IRs. General understanding of copyright, copyright transfer agreements and an ability to freely and clearly articulate them to researchers is also very vital. This is because mostly, faculty members mostly misconstrue the rights an author has to their work after they have signed a copyright transfer agreement (Murugathas and Balasooriya, 2014).

2.5.2.3 Knowledge of and ability to apply metadata schema

Mostly, working hand-in-hand with the staff responsible for technical services and other partners of research, academic librarians must be in a position to apply and understand necessary metadata schema. The ability of academic librarians to execute this responsibility is very important as new means of interoperability among existing repositories are developed and explored frequently. The extent to which the duty of the creation of metadata and their application falls to the academic librarian largely, is dependent on the existing staff resources in charge of technical services.

2.5.2.4 Knowledge of and experience with repository solutions

Though an in-depth knowledge of repository solutions might not be required, a cursory understanding of both hosted and open source repository solutions is necessary. The depth of understanding of a particular repository solution will depend on certain factors which include the type of repository solution chosen and implemented in a particular institution, the extent to which the librarian is responsible for managing the particular solution, and most importantly, the extent and quality of programming staff available to support the repository.
2.5.2.5 Ability to Develop Policy

Collaborating closely with other librarians, researchers, and management of the university, the academic librarian may be required to contribute to the development and implementation of policies which directly or indirectly affect the operations of the repository. These policies may include policies on open access, collection development, digital preservation, copyright and copyright services, and publisher embargoes.

2.5.2.6 Reporting statistics in support of outreach and education

The data of the repository concerning its usage may be collected and used for purposes such as outreach, instruction, and promotional efforts. The extent to which the academic librarian is in charge of producing these information is dependent on the depth of his or her responsibilities in managing the repository.

2.6 LIBRARY PUBLISHING SERVICES

When it comes to the dissemination and exchange of ideas and research findings, academic journals have played a very significant role in this regard. In almost all disciplines, journal articles are used as the main form of putting out research findings and other intellectual ideas (Vincent 2013:108-109). According to Lawson (2013), in the traditional model of publishing in academia, which for the last hundreds of years, have not changed, academics and researchers undertake the intellectual work of a journal i.e. producing content for these journals, editing the produced contents, and peer reviewing. Publishers on the other hand, perform such functions as copyediting and formatting to turn it into a print publication and distribute and sell it. With the advent of online digital publishing, the dynamics of the roles of authors and publishers in the previous system, has changed significantly even though the core function of journals which
according to Morris et al. (2013:2), is to “facilitate scholarly communication through the valuable filters of peer review and editing”, stays unchanged.

Many initiatives in library publishing services have been mounted over the years, but these initiatives currently, do not form a significant part of the current scholarly communication landscape (Lawson, 2013). According to Lawson (2013), in 2011, JISC (Joint Information Systems Committee) funded several library publishing projects in the UK which included: Huddersfield Open Access Publishing (HOAP) at the University of Huddersfield, SAS Open Journals at the University of London's School of Advanced Study, and UCL’s EPICURE.

There are a lot of models in open access publishing which libraries all over the world can make use of in their publishing activities. They include the use of library and university press collaborations (which is more favorable when the parent university has a printing press); publishing using online medium only, or adding printed resources as well; and also by using the infrastructure of an existing institutional repositories to embark on publishing lightweight digital resources.

Every model of library publishing service which is selected, there are associated decisions which has to be made in order to determine the nature of journals which has to be produced by the system. There could be a journal for each faculty or school; more narrowly defined subject-specific journals; a separate journal for postgraduate research and many others.

2.6.1 CORE COMPETENCIES FOR PUBLISHING SERVICES

The responsibilities of academic librarians towards publishing differ greatly from one institution to the other. In some institutions, some of the responsibilities extend to education, training
advocating for open access. Some academic librarians may write or be principal investigators on grants to fund publishing initiatives.

Academic librarians who are part of publishing work could work with journals, monographs, conference proceedings, open educational resources (OERs) or digital humanities/digital scholarship projects. Such services may be accomplished solely through the library, in collaboration with a university press, or via consortia publishing. These academic librarians should have a systematic comprehension of the current traditional and open access publishing landscapes, including options for licensing (NASIG, 2017).

Core competencies in the area of library publishing services as outlined by the National American Serials Interest Group, NASIG (2017), include but not limited to the following:

2.6.1.1 Knowledge of and experience with publishing platforms
Academic librarians in charge of scholarly communication should possess an appreciable level of knowledge and understanding of both open source and hosted publishing solutions and e-publishing tools.

2.6.1.2 Knowledge of and experience with the full life cycle of publishing
The academic librarian may assist researchers in any step of the publishing process from editorial workflow to digital preservation and accessibility. They may also be asked to participate in the development or evaluation of memoranda of agreement with publishing partners. They should also have the ability to plan and coordinate ingestion and migration of archival content which may require relevant computer skills such as Excel and or XML.
2.6.1.3 Knowledge and experience with minting identifiers
Including Crossref or Datacite DOIs, Handles, ORCiDs, and ISSNs at the personal or organizational level.

2.6.1.4 Possess a basic knowledge of relevant metadata schemata
The academic librarian may coordinate metadata deposits with CrossRef, EZID, the Directory of Open Access Journals (DOAJ), and journal aggregators requiring an understanding of schemata, e.g., Dublin Core.

2.6.1.5 Provide technical support
Levels of services which the academic librarian may be required to render may vary depending on the type of platform and infrastructure which the institution adopts which could be open source or hosted platforms. They may in circumstances where there are no technical staff available, provide initial set up, ongoing troubleshooting for individual publications, or collaborate with hosted support. Technical staff from the providers of the hosted platform often provides complete technology support upon installation, but academic librarians may need to add content and maintain web pages for editors after the platform has been installed.

2.6.1.6 Perform system administration and programming
Academic librarians in institutions using an open source system may oversee both the management of the system and programming as well as front end administrator roles, while others who have IT support will have them providing the roles of managing the system and its programming aspects.
2.6.1.7 Collect and disseminate assessment metrics

In collaboration with other staff whose activities directly or indirectly associate with the system, academic librarians may develop metrics to assess and measure the effectiveness and impact of services which the installed system might be providing.

2.7 COPYRIGHT SERVICES

According to IFLA (2004), copyright can be defined as “a person's exclusive right to authorize certain acts (such as reproduction, publication, public performance, adaptation etc.) in relation to his or her original work of authorship.” In all instances the copyright is owned by the creator of the particular work, at least in the initial stages. Nevertheless, copyright can be sold or assigned, in whole or in part, to a commercial publisher, a filmmaker, a recording studio or to someone else who will exploit the work commercially. As a consequence, copyright often benefits commercial interests more than individual authors. Copyright laws all over the world emphasize that copyright protection does not exist for itself but rather to serve the interest of the public.

Many media companies, trade associations, authors, publishers and individuals are all strong advocates of a robust intellectual property rights. These people and organizations who are mostly copyright owners view a robust system for protecting copyright as the best way for them to maximize or increase their revenue. This development however, is in a sharp contrast with the views or the disposition of the defenders on the other half of the copyright balance who are of the view that the public must have a reasonable legitimate access to copyright materials. This need of the wider public to have reasonable legitimate access is devoid of any economic incentive hence the less support it receives from professional advocates. However, a full access to knowledge and information is very important for a number of reasons. Some of them are discussed below:
For any democracy to fledge and function appropriately, a full and comprehensive exchange of information is an utmost requirement. A society which is unable to access the knowledge required for a proper discussion of political, social, environmental or economic issues will not be able to achieve the kind of broad consensus upon which a healthy society is based (IFLA, 2004).

Creativity in the production of new works be it scholarly or otherwise, is to a large extent dependent on a public domain which is very rich with information as well as providing a fair access to materials that are copyright protected. It is mostly thought stronger intellectual property rights promotes economic growth, while some concession must be made to copyright exceptions for purely social reasons. This dichotomy is however not entirely accurate. This is because, unlike the general assumption of economic expediency behind copyright regulations, many industries require access to copyright material for the purposes of research and development, education, software or hardware interoperability. A lack of reasonable access rather, can be detrimental to economic growth (Roughen, 2017).

Even though copyright rules ensure that owners of copyrighted materials are rewarded for their works and the interests of users are maintained, there are limits on the control over knowledge that copyright rules spells out. They include:

1. Duration of copyright,
2. Limited suite of rights and
3. Subject matter (Balganesh, 2013).

According to Balganesh (2013), copyright has a limited duration, after which copyright material enters the public domain and may be freely used by anyone for any purpose. This is a very
important aspect to copyright as it guarantees an enormous treasure trove of resource material that is permanently available to education, research and the development of new creative works.

On the issue of limited suite of rights, IFLA (2004), states that, a copyright owner’s capacity to control the use of his or her work is limited to the suite of rights, which is specifically granted by the copyright regime. These rights typically include the right to reproduce, the right to communicate to the public, the right to publish etc. Uses that fall outside these rights are not subject to the copyright owner’s control. For example, copyright permission is required to print copies of a book; however, once a legitimately printed copy has been sold, the copyright owner may not control what is done with that copy (with the exceptions of importation in some jurisdictions and rental and lending rights in Europe). The purchaser is free to read the book multiple times, lend, borrow, sell or destroy it.

On the issue of subject matter, Davis (2001) states that copyright historically applied only to books. It has been expanded ever since to include an ever-widening set of creative and non-creative material. For example, some compilations of purely factual data (e.g., directories) may be protected by copyright, if they fulfill the originality test, as well as by a unique database protection in many jurisdictions.

2.7.1 CORE COMPETENCIES FOR COPYRIGHT SERVICES

Core competencies in this area of emphasis as outlined by NASIG (2017) include but not limited to the following:

2.7.1.1 Knowledge of pertinent national copyright law

Academic librarians should be familiar with the national and international laws which regulates copyright. Some of these laws include the following:
1. Exclusive rights and duration

2. Exemptions and their applications, which may include the following: fair use, teaching exemptions, exemptions for libraries to make copies of items for research and preservation purposes

3. Public domain: Items in the public domain either have expired copyrights or were dedicated. Academic librarians should be able to explain what this means for use of an item and help researchers determine whether an item is in the public domain.

4. Effects of international treaties including differences in copyright duration.

2.7.1.2 Understanding of author’s rights

Academic librarians must understand the nuances surrounding rights of authors as copyright holders in order to encourage them to engage with publishers to retain the rights the authors’ desire. Additionally, they should have fluency in publication agreements and contract addenda and be prepared to explain them to authors.

2.7.1.3 Knowledge of orphan works

Academic librarians should be aware that orphan works exist and know best practices in seeking out permission or making fair use determinations for their use or digitization.

2.7.1.4 Performing licensing services

In some institutions, academic librarians are called upon to help interpret or draft licenses for the use of materials. They may also be asked to determine if there is an existing license for a copyrighted item either from a subscription license through the university or on a pay-per-use service through a collective rights organization or a corporation.
2.7.1.5 Handling permission requests

Academic librarians should recognize necessary elements of a permissions request for uses that do not qualify as fair. In some institutions, the responsibility of helping to draft permissions requests or provide permission request letter templates falls on the academic librarian.

2.7.1.6 Campus copyright policies:

Academic librarians should know their campus copyright policies and may be called upon to offer guidance in understanding use and ownership of works produced by campus authors. They may also be called upon to draft copyright policies for their various institutions.

2.8 RESEARCH DATA MANAGEMENT SERVICES

Research data management (RDM) is a set of activities that involve services, tools and infrastructure that support appropriate management of research data across the entire research lifecycle (Shearer and Schmidt, 2016). Research Data Management has several facets which are most often spread across different support services and academic departments/units such as research office, IT services and Library. According to Shearer and Schmidt (2016), interactions with researchers demonstrate that researchers need support in numerous areas across the entire research lifecycle. These areas include planning, organizing, security, documenting and sharing, preparing datasets for deposit and long-term preservation, as well as issues related to copyright, licensing, and intellectual property more generally.

As stated earlier, the area of research data management covers a very wide range of activities across the research data lifecycle. Largely, it requires a high level of interaction with researchers and also working in partnerships with other support services including technical services and research officers. For RDM training, working closely with disciplinary experts is recommended
to ensure that the terminologies and practices are relevant to the researcher and the field in which they work. Discipline-specific examples and good practices are also highly valuable for engaging the audience and for putting basic principles in context (Molloy & Snow 2012).

Over the last few years, the requirements of funders of various research projects have heightened the need to create and implement research data management plans in order to support the activities of researchers. A lot of libraries all over the world have set up departments or units which work in collaboration with other departments such as IT, legal advisory, research office and many others to provide professional support services for these researchers. The development of such services can even serve as a training ground for librarians and other institutional stakeholders (Davis & Cross, 2015). Several surveys have investigated what research data support services are offered by libraries and/or are currently emerging (Corral et al, 2013; Cox & Pinfield, 2013; Tenopir, 2014)

2.8.1 CORE COMPETENCIES FOR RESEARCH DATA MANAGEMENT

For librarians in general and scholarly communication librarians in particular to adequately perform their duties in research data management, they will require some level of subject knowledge which must include at least a basic understanding of the disciplinary landscape, norms, and standards. Other core competencies which they must develop include the following:

2.8.1.1 Data description and storage

Academic librarians responsible for Research Data Management may collaborate with researchers, technical services librarians, and other necessary units to develop and apply metadata to researcher-generated data sets and collaborate on the development of technical solutions to preserve and share data sets.
2.8.1.2 Data management planning

Academic librarians may work with institutional research offices and faculty researchers to advice on the data management planning portions of grant applications.

2.8.1.3 Knowledge of and ability to apply funder mandates related to data storage, access, and retention

The field of data management is developing at an unprecedented pace. Fulfillment of this competency requires active engagement in the profession and legislative environment while building internal teams to educate the campus community and meet emerging research data management needs.

2.8.1.4 Knowledge of and experience with open source and hosted data repository solutions

A broad understanding of data repository solutions is necessary, but the depth of that knowledge will be determined by the existing institutional infrastructure. Academic librarians should be aware of the capabilities of current institutional repositories for supporting data management as well as general data-specific repositories and be able to identify appropriate subject-specific data repositories.

2.8.1.5 Collection development, organization of, and access to third party data sets

In addition to managing research data produced at the academic librarians’ campus, they may also be involved in the purchasing, organization of, and access to third party data sets for use in research and education.

2.9 ASSESSMENT AND IMPACT METRICS

The significance of all types of libraries all over the world in recent times is no longer judged by the collections these libraries hold (Ball and Tunger, 2006). Ball and Tunger (2006), further
stated that libraries need to operate like businesses and add value and innovation to their activities. Ball and Tunger (2006), again explained that, value addition services like bibliometric and assessment and impact metrics can be adopted by libraries all over the world because they are strategically positioned and also they have the necessary sets of skills to undertake them.

Sharing the sentiments of Ball and Tunger (2006), Bladek (2014) stated that universities are under lots of pressure to prove what they are worth. This pressure has also trickled down to libraries to prove their relevance. Bladek (2014) concluded by saying that as universities are depending on bibliometrics to make decisions which include hiring and funding, promotions, among others, libraries and librarians have been presented with a good opportunity to reestablish their worth by capitalizing on their traditional knowledge of bibliometrics in this new context in order to satisfy the needs of the university.

2.9.1 CORE COMPETENCIES FOR ASSESSMENT AND IMPACT METRICS

A look at the literature reveals that a number of authors have thrown their support behind the perception that libraries and librarians must assert their usefulness by employing relevant skills in bibliometrics to provide new and improved services (Astrom and Hansson, 2013; Hendrix, 2010; Drummond and Wartho, 2009). Core competencies in this area include but not limited to the following:

2.9.1.1 Understanding of indicators of research impact, their strengths and limitations

In order to successfully undertake the activities of assessment and impact metrics, academic librarians must familiarize themselves with a wide range of research assessment methods and research impact metrics, such as bibliometrics and altmetrics, as well as qualitative measures, such as expert peer reviews. In addition, research can be assessed by four levels research output:
individual scholarly contributions, such as journal articles; venues of scholarly research, such as journals; author output over time, and group or institutional output (Roemer & Borchardt, 2015). Academic librarians should be aware of the limitations of the different indicators of research impact and that an individual indicator or metric does not automatically denote quality. Finally, academic librarians should stay abreast with the continuously changing environment of research impact metrics and criticisms of their misuse, such as the Journal Impact Factor (JIF) used solely to assess an individual author for career advancement or grant funding.

2.9.1.2 Understanding of emerging alternative measures of impact

Academic librarians should be familiar with altmetrics at the individual and institutional levels, article level (e.g. SNIP), journal level (e.g. Eigenfactor), h-index (journal level or author level), as well as tools to present them (e.g. Plum, Altmetric.com, PLOS).

2.9.1.3 Knowledge of faculty profile systems and academic social networks

Many academic institutions have implemented faculty profile systems such as VIVO or PURE to highlight the productivity of their faculty and create opportunities for collaboration. Faculty authors have rapidly adopted various academic social networks such as ResearchGate, Academia.edu, and Mendeley, which permit them to create individual profiles, list their achievements, and share versions of their articles. Academic librarians must be ready to assist authors list their publications and share appropriate versions of the articles on these systems.

2.9.1.4 Knowledge of faculty activity reporting systems

Many colleges and universities require that their faculty record their teaching, research, and scholarship in faculty activity reporting systems (e.g. Digital Measures, Sedona, Elements, and Data180). Academic librarians’ understanding of the publishing landscape is an expertise that
can benefit the faculty members. Some of these reporting systems offer direct deposit to institutional repositories, and some of them incorporate citations and altmetrics scores.

2.9.1.5 Evaluation of journals (open access and traditional)

Often in collaboration with subject liaisons and departmental faculty, academic librarians assess journals for impact and evidence of publication rigor, or help faculty discover new outlets for their research. Academic librarians may provide information regarding metrics to tenure and promotion committees as requested.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter consists of the various systematic approaches by which the study has been carried out. The study which is exploratory in nature seeks to examine the skills and competencies of academic librarians of private universities towards scholarly communication.

According to Kothari (2004:8), “research methodology deals with the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them”. Moreover, Rajasekar, Philominathan and Chinnathambi (2010:14) also describe research methodology to mean “the procedures by which researchers go about their work of describing, explaining, and predicting phenomenon”. Research methodology can be said simply to mean the scientific study of how research is to be carried out. There are a host of methods which can be used to carry out research in the social sciences. This study adopted the exploratory research method. The researcher wanted to examine the skills set and the core competency profiles of academic librarians in selected private universities in relations to supporting scholarly communication activities. The quantitative method was adopted to analyze the collected data and to present the findings of the study. Themes to be considered under methodology will include research design, selection of case, population, data collection instruments and presentation of analyzed data.
3.2 RESEARCH DESIGN

A research design refers to the overall strategies that a researcher choose to integrate the different components of a study in a coherent and logical way, thereby, ensuring that one will effectively address the research problem (De Vaus, 2001). A research design is therefore the plan for collecting, measuring and analyzing research data. In the view of Kothari (2004), a good research design is important because it facilitates research to be as efficient as possible, thereby yielding maximal information.

For the purpose of this study, the researcher adopted the case study design with quantitative approach. According to Mujis (2010), quantitative design emphasizes objective mathematical or numerical analysis of data collected through polls, questionnaires and surveys. In quantitative research, numerical data which are collected are usually generalized across groups in order to offer explanation to a particular phenomenon (Babbie, 2010). In the view of Babbie (2001), case study investigates or examines issues relating to a family, a group, an individual, a community or society at large. Case studies most often than not, offer a description of an issue or a phenomenon. According to Zack (2006), one of the areas in which case study method became and has remained popular is in the areas of organizational research, where the focus is on understanding a particular work environment or structure and not necessary in predicting results in other areas.

3.3 SELECTION OF CASES

A total of thirteen (13) private universities were selected as the cases for the study. The selected institutions were Central University, Ashesi University, Ghana Technology University College, Wisconsin University College, Methodist University College, Pentecost University College, Valley View University College, Webster University College, Lancaster University College,
African University College of Communication, BlueCrest University College, Heritage University College and Zenith University College.

The selection of these institutions was based on the following factors:

1. **Institutional accreditation by the National Accreditation Board:** Private universities which had been given institutional accreditation as at the time of this research by the National Accreditation Board (NAB) of the Republic of Ghana were selected. This is because institutions which are not accredited by the National Accreditation Board are not recognized therefore, any scholarly or academic work which the institutions undertake is considered not to be valid.

2. **Number of years of existence (combination of old and new ones):** The number of years the various private universities have been in existence was also considered in the selection process. This was to ensure that there was a blend of old and new ones. This blend will ensure that the findings of the study will be reflect adequately on all institutions.

3. **Willingness of the institutions to partake in the study:** The readiness and willingness of the institutions to take part in the study was also considered. The researcher established a preliminary contact with the selected institutions and these institutions indicated their willingness to participate. This ensured that the librarians of these institutions freely co-operated with the researcher.

### 3.4 STUDY POPULATION

A population may be described as a collection of individuals or objects which has at least one or sometimes several characteristics that sets it apart from any other population (Frankel and
Wallen, 2008). Descombe (2014:13) also defines a research population to consist of all the elements in the category of things that are being researched. Also, Gravetter and Forzano (2006) also states that a population refers to the entire individuals of interest to a researcher. They further state that even though in the conduct of research the entire population does not partake, the results of the findings of the study are usually generalized to the entire population. For the purpose of this study, professional academic librarians of selected private universities were used as the population of the study. As at the time of collection of this data, there were 38 of these professionals in the selected universities. The researcher used the entire population as the sample size because it was small. Therefore, there was no sampling technique used.

**Table 3.1 Respondents from the selected universities**

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>NUMBER OF PROFESSIONAL LIBRARIANS SELECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central University</td>
<td>7</td>
</tr>
<tr>
<td>Ghana Technology University</td>
<td>3</td>
</tr>
<tr>
<td>Ashesi University</td>
<td>1</td>
</tr>
<tr>
<td>Wisconsin University College</td>
<td>3</td>
</tr>
<tr>
<td>Webster University College</td>
<td>1</td>
</tr>
<tr>
<td>Methodist University College</td>
<td>4</td>
</tr>
<tr>
<td>Zenith University College</td>
<td>2</td>
</tr>
<tr>
<td>Pentecost University College</td>
<td>2</td>
</tr>
<tr>
<td>BlueCrest University College</td>
<td>1</td>
</tr>
<tr>
<td>African University College of Communication</td>
<td>1</td>
</tr>
<tr>
<td>College</td>
<td>Count</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Heritage Christian College</td>
<td>1</td>
</tr>
<tr>
<td>Lancaster University College</td>
<td>1</td>
</tr>
<tr>
<td>Valley View University College</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

(Source: Field Data, 2019)

3.5 SOURCES OF DATA

Primary and secondary sources of data were used to complete the objectives of the study. The questionnaire was used as the data collection instrument for the primary source. The data collected using the questionnaire provided first-hand information on the competencies of academic librarians in supporting scholarly communication. According to Merriam and Tisdell (2015), primary data provides first-hand information on a topic which is based on evidence. Targeted respondents of the study were directly engaged by the researcher during the collection of the study. According to Baglione (2012:113), instruments for collecting primary data include but not limited to the following: interviews, surveys, questionnaires, focus group discussions.

This study also made use of secondary sources of data as well. Secondary sources of data are published as well as unpublished works that have gone through some form of modification from the original state. They include books, journal articles, conference proceedings etc.

3.6 DATA COLLECTION INSTRUMENT

Data collection is the process of gathering and measuring information from all the relevant variables of interest in an established systematic fashion that enables one to answer stated research questions, test hypothesis and evaluate outcomes (Most et al, 2003). The questionnaire was used as the instrument to collect primary data. According to Cohen, Manion and Morrison (2000:245), “questionnaires can be used to collect data quickly, all participants can be given the
opportunity to provide feedback and also because feedback is anonymous it encourages openness and honesty”. Also Twumasi (2001), states that, the use of the questionnaire is one of the very efficient ways to collect statistically quantifiable information. He continues further by stating that the efficiency of the questionnaire lies in the fact that a lot of respondents can be reached within a very short time.

The questionnaire was structured into four parts to reflect the objectives of the study. There were a total of 14 questions consisting of both closed and open ended questions. The first section of the questionnaire consisted of demographic characteristics of the respondents. The second section emphasized the roles of academic librarians in the conduct of academic research, the third section highlighted the skills and competency profiles needed for scholarly communication and the final section examined the methods through which librarians acquire skills and competencies for scholarly communication, the effectiveness of the said methods, and ways of ascertaining training needs of librarians.

The choice of a questionnaire as a research instrument was informed by the following;

1. Large amounts of information can be collected from a large number of people in a short period of time and in a relatively cost effective way.

2. The results of the questionnaire can usually be quickly and easily quantified by either a researcher or through the use of a software package

3. When data has been quantified, it can be used to compare and contrast other research and may be used to measure change and

4. Positivists also believe that quantitative data can be used to create new theories and/or test existing hypotheses.
3.6.1 Mode of Data Collection

Firstly, an introductory letter was taken from the Head, Department of Information Studies, University of Ghana, Legon to the librarians of the selected institutions, seeking their consent to conduct the study. After such consent was granted, copies of the questionnaire were distributed to the respondents personally by the researcher. The purpose of the research was explained to the respondents and consent was sought before copies of the questionnaire were given out to them. The respondents here refer to professional librarians who had a minimum qualification of Master of Arts in Information Studies. The researcher placed phone calls to the selected libraries to prepare the grounds before questionnaires were distributed. The respondents were expected to complete the questionnaire within the shortest possible time (approximately one week.). The kind of data the researcher collected from the respondents was mainly quantitative data. In addition to questionnaire the researcher requested documentary sources such as brochures and other relevant internally generated bulletins from management. The entire data collection exercise lasted four weeks.

3.7 DATA ANALYSIS AND PRESENTATION

Data analysis is the process of extracting relevant from a given data. Statistical Package for Social Sciences (SPSS) version 22 was used to analyze data which was collected for the study. SPSS is widely used for statistical analysis, manipulation of quantitative data and also producing tables and graphs that summarizes collected data. With the use of SPSS, one can analyze data by:

1. Describing data using descriptive statistics e.g frequency, mean, minimum and maximum
2. Examining relationships between variables e.g. correlation, regression, factor analysis etc.
Primary data was collected from respondents, edited, and cleaned. The questionnaires were then coded by allotting serial numbers to them for easy identification. The data was then entered into the SPSS for manipulation. To ensure easy identification and interpretation of data, the summary of the results from the SPSS were collated into figures and tables.

3.8 ETHICAL CONSIDERATIONS

In conducting research, there are various professional codes of conduct as well as regulations which researchers are supposed to comply with. According to Creswell (2009), researchers need to protect their research participants; develop trust with them; promote integrity of the research; guard against misconduct and impropriety that might reflect negatively on their institutions.

In view of this, a letter of consent was taken from the Department of Information Studies and the respondents were duly informed about the intent of the study.

The confidentiality, anonymity and the rights of respondents to withdraw from taking part in answering the questionnaire was also considered. However, the researcher encouraged respondents to take part in the research. In case of some reason or the other, if certain parts of the questionnaire needed to be hidden, debriefing was also done.

The dignity of participants and those that could be affected by the results of the study was also protected.

Also, data collected as a result of the study was used strictly for academic purposes.

Again, all literary materials that that were used in the study was fully acknowledged in order to avoid plagiarism.
The researcher also adhered to the University Of Ghana Code Of Conduct governing the conduct of research.
CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 INTRODUCTION

The chapter consists of the findings and analysis of the primary data used for the study. The tool which was used to collect the primary data was the Questionnaire. Views were solicited from library staff who had a minimum qualification of Master of Arts in Information Studies in the selected Private Universities in the Greater Accra Region. The response rate of the respondents for the study was ninety-seven percent (97%) which is an implication that the respondents were enthused and willing to participate in the study.

The respondents for the study were the library staff of selected Private Universities in the Greater Accra Region who had a minimum qualification of Master of Arts in Information Studies. Thirteen (13) schools were selected. The names of the selected institutions were identified as well as their addresses. This activity enabled the researcher to track and also verify the data which were collected from the respondents. Moreover in instances where clarifications had to be sought from respondents, it enabled the researcher to do so without any difficulties.

4.2 LIBRARIANS’ ROLE IN ACADEMIC RESEARCH

The views of the respondents were elicited concerning the roles they play in academic research. The respondents were requested to rate their responses on a scale of 1 – 5 where 1 – strongly agree, 2 – agree, 3 – neutral, 4 – disagree, 5 – strongly disagree.
Table 4.1: Librarians’ role in promoting academic research

<table>
<thead>
<tr>
<th>Librarian roles</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td></td>
<td>F (%)</td>
</tr>
<tr>
<td>Increase access to information</td>
<td>22 (81.5%)</td>
</tr>
<tr>
<td>Promote information literacy</td>
<td>18 (66.7%)</td>
</tr>
<tr>
<td>Digitisation</td>
<td>10 (37%)</td>
</tr>
<tr>
<td>Virtual research environment management</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Institutional repository management</td>
<td>14 (51.9%)</td>
</tr>
<tr>
<td>Digital curation and preservation management</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>Research data management</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>Marketing and publicity of scholarly materials</td>
<td>17 (63%)</td>
</tr>
<tr>
<td>Promote personal information management</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Ensure copyright compliance</td>
<td>18 (66.7%)</td>
</tr>
<tr>
<td>Promote open access scholarship</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Alert and tagging services</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Networking and collaboration</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>Literature gap analysis</td>
<td>3 (11.1%)</td>
</tr>
</tbody>
</table>

*Source (Field Survey, 2019)*

4.2.1 Increase Access to Information

Librarians’ role of increasing access to information was stated to be the major role librarians play in the process of the conduct of academic research. To this statement, 22(81.5%) respondents strongly agreed, 2(7.4%) agreed whiles 3(11.1%) strongly disagreed. The librarians were therefore of the opinion that providing information to support the teaching and learning objectives of their institutions was one of their primary responsibilities.
4.2.2 Promote Information Literacy

Promoting information literacy was recorded to be one of the major responsibilities of academic librarians. Confirming this, 18 (66.7%) respondents strongly agreed that academic librarians must promote information literacy, 5 (18.5%) agreed, 1 (3.7%) was neutral, 2 (7.4%) disagreed while 1 (3.7%) also strongly disagreed. Academic librarians taking on this role means that they have assumed the responsibilities of educators who must ensure that their current as well as prospective patrons are able to identify their information needs as well as locate the source and type of information which can satisfy their need.

4.2.3 Digitization

On the issue of digitization, 10 (37%) of the respondents strongly agreed that academic librarians must be involved in the process, 4 (14.8%) also agreed, 8 (29.6%) were neutral whiles 5 (18.5%) disagreed that academic librarians must not perform any role in Digitization.

4.2.4 Virtual Research Environment Management

On the issue of virtual research environment management, 6 (22.2%) of the respondents said they strongly agree that academic librarians must perform that role, 12 (44.4%) also agreed, 3 (11.1%) were neutral, whiles another 5 (18.5%) disagreed that this role must be performed by academic librarians.

4.2.5 Institutional Repository Management

In the management of institutional repositories, 14 (51.9%) of the respondents strongly agreed that it forms part of the roles academic librarians perform in the process of academic research, 5 (18.5%) respondents agreed. Another 3 (11.1%) were neutral whiles 1 (3.7%) disagreed. A further 3 (11.1%) strongly disagreed to librarians managing institutional repositories.
Institutional repositories serve to preserve and showcase copies of the intellectual output of the creating institution.

**4.2.6 Digital Curation and Preservation Management**

Digital curation allows the continuous remote access of materials which have been curated digitally whiles preservation of materials also ensure the longevity of the materials involved. On the issue of digital curation and preservation management, 5 (18.5%) of the respondents strongly agreed that it is a role librarians must perform, 13 (48.1%) agreed, 5 (18.5%) were neutral whilst 1 (3.7%) and 3 (11.1%) disagreed and strongly disagreed respectively.

**4.2.7 Research Data Management**

Research data management was strongly supported by 9 (33.3%) of the respondents as being role academic librarians must perform to support academic research, 13 (48.1%) also agreed. A further 2 (7.4%) respondents were neutral whiles 3 (11.1%) respondents strongly disagreed.

**4.2.8 Marketing and Publicity of Scholarly Materials**

Marketing and publicity of scholarly materials was also seen as a major role performed by librarians to promote academic research. To this statement, 5 (18.5%) of the respondents agreed that academic librarians must market and publicize the resource in their libraries to their patrons and potential users, 17 (63.0%) strongly agreed. However, 2 (7.4%) respondents were neutral whiles 3 representing 11.1% were in disagreement.

**4.2.9 Promote Personal Information Management**

Also, on the issue of promoting personal information management, it was discovered that 6 (22.2%) of the respondents strongly supported academic librarians performing such a role, 14
(51.9%) agreed whiles 4 (14.8%) were neutral. However, 2 (7.4%) disagreed and 1 (3.7%) also strongly disagreed.

4.2.10 Ensure Copyright Compliance
Again, on ensuring copyright compliance and to discourage the abuse of regulations on intellectual property, 18 (66.7%) of the respondents strongly agreed that librarians must play that role, 6 (22.2%) also agreed whiles 1 (3.7%) respondent was in disagreement.

4.2.11 Promote Open Access Scholarship
Open access has been touted by many as the future of libraries. Responding to this statement, 13 (48.1%) of the respondents were of the strong opinion that academic librarians must be involved in the promotion of open access scholarship, 6 (22.2%) of the respondents also agreed. However, 11.1% of the respondents were in disagreement whiles another 11.1% were neutral.

4.3.12 Alert and Tagging Services
Moreover, 6 (22.2%) of the total respondents strongly agreed that academic librarians must perform alert and tagging services for library clientele, 7 (25.9%) also agreed to the statement whiles 3(11.1%) also expressed neutral stance on the subject matter. However, 2 (7.4%) were in disagreement whiles another 8 (29.6%) of the respondents were in strong disagreement.

4.2.13 Networking and Collaboration
Furthermore, on the issue of librarians networking and collaborating with fellow librarians and other information providers in order to have access to current and rare materials to satisfy the information needs of their clientele, 9 (33.3%) of the respondents strongly agreed that academic librarians must network and collaborate, 5 (18.5%) also strongly agreed that whiles 11.1% were
neutral. However, 2 (7.4%) disagreed to the statement whiles another 8 (29.6%) of the respondents strongly disagreed.

4.2.14 Literature Gap Analysis

Finally, on the roles of academic librarians in academic research, the views of respondents were sought concerning librarians performing the role of literature gap analysis. Responding to this statement, 3 (11.1%) were in strong agreement of such a practice, 7 (25.9%) also agreed. Another 5 (18.5%) expressed neutral stance on the subject matter. However, 7 (25.9%) of the respondents strongly disagreed and 5 (18.5%) also disagreed to the subject matter.

4.3 LIBRARIANS’ KNOWLEDGE AND UNDERSTANDING OF SCHOLARLY PUBLISHING SERVICES

Respondents were asked to indicate their level of understanding and knowledge they had about scholarly publishing services. They were requested to rate their level of understanding and knowledge from none to advanced.

4.3.1 Commercial and Open Access Publishing Platforms

Responding to their knowledge and understanding of commercial and open access publishing platforms, 7 (25.9%) of the respondents indicated that they had basic knowledge of these platforms, 11 (40.7%) also indicated they had an intermediate knowledge and understanding of the platforms, another 8 (29.6%) also indicated that they had advanced knowledge of the publishing platforms whiles 1 (3.7%) representing one respondent indicated that he/she had no knowledge and understanding of commercial and open access publishing.
4.3.2 Editorial Services

Also, 6 (22.2%) of the respondents stated that they had basic knowledge and understanding of editorial services, 15 (55.6%) also indicated that they had an intermediate knowledge and understanding of the subject matter whiles 5 (18.5%) indicated that they had advanced level knowledge and understanding of editorial services.

4.3.3 Standards (DOI, ISSN, ISBN etc.)

On the issue of standards (DOI, ISSN, ISBN etc.), 12 (44.4%) of the respondents indicated that they had intermediate level knowledge and understanding of the issues surrounding standards and how they work, 6 (22.2%) stated that they had a basic knowledge and understanding whiles 8 (29.6%) specified that they had advanced knowledge of standards.

4.3.4 Funder Mandates and Requirements

Furthermore, the level of knowledge of respondents with regards to the requirements of international and national funders was also solicited. 11 (40.7%) indicated that they had basic knowledge of such requirements, 7 (25.9%) also indicated that they had intermediate knowledge, 3 (11.1%) indicated that they had advanced knowledge whiles another 3 (11.1%) stated that they had no knowledge and understanding of funder requirements.

4.3.5 Metadata Standards and Recovery Tools

Again, the views of respondents were solicited on the level of knowledge and understanding they have on metadata standards and recovery tools. 16 (59.3%) of the respondents indicated that they had basic knowledge, 7 (25.9%) showed that they had intermediate knowledge whiles 3 (11.1%) also showed that they had advanced knowledge. Another 3 (11.1%) specified that they have no knowledge on metadata standards and recovery tools.
4.3.6 Licensing Issues Pertaining to Open Access

Also, the respondents were asked about the knowledge they have with regards to licensing issues pertaining to open access. Responding to this statement, 13 (48.1%) of the respondents showed that they had basic knowledge about the issue under discussion, 6 (22.2%) showed that they had intermediate knowledge whiles 7 (25.9%) also indicated that they had advanced knowledge of open access licensing issues.

4.3.7 Data Curation and Preservation Practices

Respondents were further asked to rate their knowledge and skills in the area of data curation and preservation practices. Out of the total number of respondents, 13 (48.1%) of the respondents rated their knowledge and skill as basic, 9 (33.3%) also rated their knowledge and skill as intermediate whiles 5 (18.5%) rated theirs as advanced.

4.3.8 Manage Open Access Publishing Software

Last but not the least, the respondents of the study were asked about how conversant they were with the management of open access publishing software services. Responding to this statement, 11 (40.7%) rated their knowledge as basic, 6 (22.2%) rated theirs as intermediate whiles 8 (29.6%) also indicated that they have advanced knowledge in the management of open access publishing software services.
Table 4.2: Librarians’ knowledge and understanding of scholarly publishing services

<table>
<thead>
<tr>
<th>Scholarly publishing services</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic F (%)</td>
</tr>
<tr>
<td>Commercial &amp; open access publishing platforms</td>
<td>7 (25.9%)</td>
</tr>
<tr>
<td>Editorial services</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Standards (DOI, ISSN, ISBN, etc.)</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Funder mandates and requirements</td>
<td>11 (40.7%)</td>
</tr>
<tr>
<td>Metadata standard and recovery tools</td>
<td>16 (59.3%)</td>
</tr>
<tr>
<td>Licensing issues pertaining to open access</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Data curation and preservation practices</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Manage open access publishing software services</td>
<td>11 (40.7%)</td>
</tr>
</tbody>
</table>

Source (Field Survey, 2019)

4.4 LIBRARIANS’ KNOWLEDGE OF OPEN ACCESS REPOSITORY
This section of the study sought to ascertain the level of knowledge and understanding the respondents had with regard to open access repositories and their management. Respondents were required to rate their knowledge and understanding on a scale of 1 – 4 where: 1 – basic, 2 – intermediate, 3 – advanced, 4 – none.

4.4.1 Open Access Policies and Requirements
Respondents were requested to rate their knowledge and understanding of open access policies and requirements. Responding to this statement, 2 (7.4%) of the respondents indicated that their knowledge and understanding on open access policies and requirements are basic, 16 (59.3%) also indicated that they had intermediate knowledge on the subject matter whiles 9 (33.3%) also rated their knowledge on the subject matter as advanced.
4.4.2 Repository Software, Metadata Standards and Recovery Tools

Furthermore, respondents were asked about their knowledge on repository software, metadata standards and discovery tools. Out of the total number of respondents, 4 (14.8%) indicated that the level of their knowledge is basic, 19 (70.4%) rated their knowledge as intermediate whiles another 4 (14.8%) rated theirs as advanced.

4.4.3 Data formats, Database Design and Data Manipulation Tools

Also, on the issue of data formats, database design, data management and data manipulation tools, 5 (18.5%) rated their knowledge as basic, 16 (59.3%) rated their knowledge as intermediate whiles 6 (22.2%) rated their knowledge as advanced.

4.4.4 Data Curation and Preservation Practices

Again, respondents were asked about their knowledge and understanding of data curation and preservation practices. In response, 13 (48.1%) rated their knowledge as basic, 9 (33.3%) also rated their knowledge as intermediate whiles 5 (18.5%) rated their knowledge as advanced.

4.4.5 Copyright and Licensing Issues Pertaining to Scholarly Communication

Moreover, asked about their knowledge and understanding on copyright issues pertaining to scholarly contents, 4 (14.8%) indicated that they had a basic understanding of the subject matter, 11 (40.7%) rated their knowledge as intermediate whiles 12 (44.4%) also rated their knowledge as advanced.

4.4.6 Manage Repository Platforms and Update Software

Respondents were again asked about their knowledge in managing repository platforms and updating software. Responding to this, 17 (63%) rated their knowledge as intermediate whiles 7 (25.9%) rated their knowledge as advanced. However, 1 (3.7%) indicated that their knowledge is
basic and another 1 (3.7%) indicated that they have no knowledge on the management of repository platforms and updating software.

### 4.4.7 Liaise with Publishers on Issues Such as Archiving Policies

On the issue of librarians liaising with publishers on issues such as archiving policies, 6 (22.2%) rated their knowledge about it as basic, 14 (51.9%) rated theirs as intermediate whiles 5 (18.5%) rated theirs as advanced. However, 2 (7.4%) also indicated that they have no knowledge on establishing contacts with publishers to determine requirements on issues such as archiving policies. Table 4.3 is an illustration of the above findings:

**Table 4.3: Librarians’ knowledge of open access repository**

<table>
<thead>
<tr>
<th>Open access repository</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic F (%)</td>
</tr>
<tr>
<td>Open access policies and requirements</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Repository software, metadata standards and discovery tools</td>
<td>4 (14.8%)</td>
</tr>
<tr>
<td>Data formats, Database design, data management, data manipulation tools</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>Data curation and preservation practices</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Copyright and licensing issues pertaining to scholarly content</td>
<td>4 (14.8%)</td>
</tr>
<tr>
<td>Manage repository platform and update software</td>
<td>1 (3.7%)</td>
</tr>
<tr>
<td>Liaise with publishers on issues such as archiving policies</td>
<td>6 (22.2%)</td>
</tr>
</tbody>
</table>

*Source (Field Survey, 2019)*

58
4.5 LIBRARIANS’ KNOWLEDGE OF ASSESSMENT OF SCHOLARLY RESOURCES AND IMPACT METRICS

For some time now, academic librarians have put on another role by helping authors to determine the impact of scholarly materials they put out. This, they are able to do through citation counts and the provision of access to journal impact factors. This section of the study sought to inquire from the respondents, the level of knowledge and understanding they have about assessment and impact metrics.

4.5.1 Assessment Criteria for Journals and Other Resources

Respondents of the study were asked to indicate their level of knowledge and understanding on assessment criteria for journals and other resources. Responding to this statement, 2 (7.4%) stated that they had basic knowledge about it, 12 (44.4%) stated that they had intermediate knowledge about it whiles another 12 (44.4%) also indicated that they had advanced knowledge about it. However, 1 (3.7%) said they have no knowledge about the subject matter.

4.5.2 Bibliometrics and Altmetrics Theory and Practice

Bibliometrics is a statistical assessment of the impact of research output. On the issue of bibliometrics and altmetrics theory and practice, 10 (37%) of the respondents indicated that their knowledge on the subject is at the basic level. 9 (33.3%) also indicate that they had an intermediate level knowledge about the issue whiles 6 (22.2%) also stated that they had advanced level knowledge about the issue. However, 2 (7.4%) on the other hand stated that they no knowledge and understanding concerning the issue under discussion.
4.5.3 Institutional Assessment of Scholarly Output

Furthermore, the respondents were asked about the knowledge they have concerning their institutional assessment of scholarly output. Responding to this statement, 4 (14.8%) stated that the level of knowledge they have about it is basic, 8 (29.6%) also specified that they had an intermediate knowledge and understanding whiles 14 (51.9%) also indicated the level of knowledge they had about institutional assessment of scholarly output is advanced whiles 1 (3.7%) indicated that they had no knowledge with regards to subject matter.

4.5.4 Provision of Support to Faculty in Assessing Scholarly Resources

The research set out to find out the level of knowledge of the respondents concerning the provision of support to members of faculty in assessing scholarly resources. Out of the total number of respondents, 20 (74.1%) of the respondents indicated that they had advanced level knowledge in doing so. This shows that a greater majority of the respondents are able to assist their various faculty members in locating relevant information as well as accessing them. A further 5 (18.5%) of the respondents also indicated that they had intermediate level knowledge about it whiles 2 (7.4%) also stated that they have basic level knowledge about the subject matter.

4.5.5 Provision of Advice to Library Acquisition Department on Quality Indicators

To determine whether respondents of the study are able to provide advice to their library acquisition department concerning quality indicators, 19 (70.4%) indicated that they had advanced knowledge about it. This also signifies that majority of the respondents of the study are able to make meaningful inputs into the types of resources which are purchased for the use of the users of the libraries. A further 6 (22.2%) also indicated that they had an intermediate knowledge
about it whiles 2 (7.4%) indicated their knowledge to be at the basic level with regards to the subject matter. Table 4.4 illustrates the above findings:

**Table 4.4: Assessment and impact metrics**

<table>
<thead>
<tr>
<th>Assessment and impact metrics</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic F (%)</td>
</tr>
<tr>
<td>Assessment criteria for journals and other resources</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Bibliometrics and altmetrics theory and practice</td>
<td>10 (37%)</td>
</tr>
<tr>
<td>Institutional assessment of scholarly output</td>
<td>4 (14.8%)</td>
</tr>
<tr>
<td>Provision of support to faculty in assessing scholarly resources</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Provision of advice to library acquisition department on quality indicators</td>
<td>2 (7.4%)</td>
</tr>
</tbody>
</table>

*Source (Field Survey, 2019)*

**4.6 LIBRARIANS’ KNOWLEDGE OF INSTITUTIONAL REPOSITORY MANAGEMENT**

In the development of institutional repositories, academic librarians play a major role, especially in the areas of advocacy as well as the management of the repository. Therefore, a clear understanding of institutional goals for the repository initiative and ability to articulate those goals is very critical. There is also the need for academic librarians to be fluent in the best practices for IR content recruitment and description, as well as in some instances, managing the supporting technical infrastructure.
To be able to determine the level of knowledge the respondents have about institutional repository, they were asked to rate their knowledge on a rating scale where 1 – basic, 2 – intermediate, 3 – advanced, and 4 – none.

4.6.1 Ability to Apply Publisher Policies on Archiving

The ability of the respondents to apply publisher policies on archiving of materials was solicited. Responding to this statement, 13 (48.1%) rated their knowledge as intermediate, 7 (25.9%) rated theirs as basic whiles 6 (22.2%) also rated theirs as advanced. This shows that majority of the respondents of the study did not have in-depth knowledge on applying publisher policies concerning archiving in institutional repository environment. However, 1 (3.7%) of the respondents indicated that they had no knowledge on the subject matter.

4.6.2 Ability to Apply Metadata Schemata

Also, the ability of respondents to apply metadata schemata was also solicited. Out of the total number of respondents 11 (40.7%) of the respondents indicated that they had a basic level understanding of the phenomena whiles 15 (55.6%) also stated that they had an intermediate level knowledge and understanding of the phenomena. None of the respondents indicated that they had advanced knowledge in the area of applying metadata schemata. This situation put into question, the ability of academic librarians in the selected institutions to adequately describe materials in institutional repositories for easy retrieval.

4.6.3 Ability to Collect, Store, and Preserve Institutional Intellectual Output

Again, respondents were asked about their ability to collect, store and preserve institutional intellectual output. Responding to this, 3 (11.1%) of the respondents showed that they had a basic level knowledge about it. A further 2 (7.4%) indicated that they had intermediate level
knowledge whiles 22 (81.5%) also indicated that they had advanced level knowledge about it, showing that respondents of the study were very knowledgeable about collecting, storing, preserving and providing access to intellectual outputs produced by their institutions.

4.6.4 Knowledge of Repository Solutions

Furthermore, the knowledge of the respondents on repository solutions was also asked. Responding to this question, 3 (11.1%) respondents stated that they had a basic level knowledge, 9 (33.3%) respondents also stated that they had an intermediate level knowledge whiles 14 (51.9%) respondents also stated that they had advanced level knowledge. Majority of the respondents therefore, had an appreciable level of knowledge about the subject matter.

4.6.5 Ability to Develop Policies

Respondents were asked about their ability to develop policies with regards to the management of institutional repositories. Responding to this statement, 5 (18.5%) of the respondents showed that the level of knowledge they have about policy development is at the basic level, 11 (40.7%) stated that theirs is at the intermediate level whiles another 11 (40.7%) stated that they have advanced level knowledge about policy development concerning institutional repositories.

4.6.6 Reporting Statistics in Support of Outreach and Education

On the issue of reporting statistics in support of outreach and education, 4 (14.8%) of the total respondents indicated that they had a basic level knowledge in doing so, 7 (25.9%) also indicated that had an intermediate level knowledge in doing so whiles 15 (55.6%) also showed that they have advanced level knowledge about the phenomenon. However, 1 (3.7%) indicated that they have no knowledge about statistics reporting in support of outreach and education. Table 4.5 exemplifies the findings above:
### Table 4.5: Librarians’ knowledge of institutional repository management

<table>
<thead>
<tr>
<th>Institutional repository management</th>
<th>Basic F (%)</th>
<th>Intermediate F (%)</th>
<th>Advanced F (%)</th>
<th>None F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to apply publisher policy on archiving</td>
<td>7 (25.9%)</td>
<td>13 (48.1%)</td>
<td>6 (22.2%)</td>
<td>1 (3.7%)</td>
</tr>
<tr>
<td>Ability to apply metadata schemata</td>
<td>11 (40.7%)</td>
<td>15 (55.6%)</td>
<td>1 (3.7%)</td>
<td></td>
</tr>
<tr>
<td>Ability to collect, store and preserve institutional intellectual output</td>
<td>3 (11.1%)</td>
<td>2 (7.4%)</td>
<td>22 (81.5%)</td>
<td></td>
</tr>
<tr>
<td>Knowledge of repository solutions</td>
<td>3 (11.1%)</td>
<td>9 (33.3%)</td>
<td>15 (51.9%)</td>
<td>1 (3.7%)</td>
</tr>
<tr>
<td>Ability to develop policies</td>
<td>5 (18.5%)</td>
<td>11 (40.7%)</td>
<td>11 (40.7%)</td>
<td></td>
</tr>
<tr>
<td>Reporting statistics in support of outreach and education</td>
<td>4 (14.8%)</td>
<td>7 (25.9%)</td>
<td>15 (55.6%)</td>
<td>1 (3.7%)</td>
</tr>
</tbody>
</table>

Source (Field Survey, 2019)

### 4.7 LIBRARIANS KNOWLEDGE OF COPYRIGHT SERVICES

According to IFLA (2004), copyright can be defined as a person's exclusive right to authorize certain acts (such as reproduction, publication, public performance, adaptation etc.) in relation to his or her original work of authorship. It is imperative that academic librarians are well versed in copyright matters so that they can in turn educate patrons of their libraries on best practices to follow in order to avoid being caught in plagiarism and other copyright offences. This section of the study sought to ascertain the level of knowledge and understanding the respondents had about copyright services. The respondents were required to rank their knowledge on a scale of 1 – 4, where, 1 – basic, 2 – intermediate, 3 – advanced, and 4 – none.

#### 4.7.1 Knowledge of Pertinent National Copyright Law

The respondents were asked to rate their knowledge of pertinent national copyright laws. This was to test the extent to which the respondents were familiar with national copyright regulations and laws and how they operate. In response to this issue, 2 (7.4%) of the respondents stated that
they had a basic level knowledge, 5 (18.5%) also stated that they had an intermediate level knowledge whiles 20 (74.1%) of the respondents stated that they had advanced level knowledge about pertinent national copyright laws. This shows that majority of the respondents were very much aware of national copyright laws and its applications.

4.7.2 Understanding of Authors Rights

Also, to ascertain the level of knowledge the respondents have about the nuances of authors’ rights as copyright holders, 22 (81.5%) of the respondents stated that they had advanced level knowledge about such issues. This shows that a good majority of the respondents of the study were knowledgeable on issues pertaining to the rights authors hold on their work. A further 4 (14.8%) also indicated that they had an intermediate level knowledge while 1 (3.7%) also stated that they had basic level knowledge about the issue of right of authors as copyright holders.

4.7.3 Knowledge of Orphan Works

Again, the respondents were asked about their level of knowledge about the existence of orphan works. Responding to this statement, 8 (29.6%) said that they had a basic knowledge about orphan works, 10 (37.0%) stated that they had an intermediate level knowledge whiles 8 (29.6%) again stated that they had an advanced knowledge about orphan works. These figures presuppose that an appreciable number of the respondents had knowledge about the existence of orphan works and best practices in seeking out permission or making fair use determinations for their use or digitization.

4.7.4 Performing Licensing Services

Furthermore, respondents were asked about the level of their knowledge in the performance of licensing services such as drafting licenses or determining if a copyrighted item has been
licensed. Responding to this statement, 2 (7.4%) of the respondents stated that they had a basic knowledge, 17 (63.0%) also indicated that they had an intermediate level knowledge whiles 6 (22.2%) showed that they had advanced level knowledge. Another 2 (7.4%) also stated that they had no knowledge about performance of any licensure services.

4.7.5 Handling Permission Requests

In order to determine the ability of the respondents to recognize necessary elements of a permissions request for uses that do not qualify as fair and those that qualify as fair use, the respondents were asked about the level of knowledge they have on the handling of permission requests. Out of the total number of respondents 6 (22.2%) of the respondents stated that they had a basic level understanding of the subject matter, 12 (44.4%) stated that they had an intermediate level knowledge about handling permission requests whiles 8 (29.6%) also indicated that they had advanced level understanding of permission requests handling.

4.7.6 Campus Copyright Policies

On the issue of copyright services, the respondents of the study were asked how familiar they were with their campus copyright policies. This is particularly important because such knowledge will enable them to provide guidance in understanding use and ownership of works produced by campus authors. On this, 3 (11.1%) stated that they had basic level knowledge about their campus copyright policies, 8 (29.6%) stated that they had an intermediate level knowledge about the subject matter whiles 15 (55.6%) also indicated that they had advanced level knowledge about their campus copyright policies. however, 1 (3.7%) stated that they had no knowledge about their campus copyright policies. Table 4.6 is an illustration of the above findings:
Table 4.6: Librarians’ knowledge of copyright services

<table>
<thead>
<tr>
<th>Copyright services</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic F (%)</td>
</tr>
<tr>
<td>Knowledge of pertinent national copyright laws</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Understanding of authors rights</td>
<td>1 (3.7%)</td>
</tr>
<tr>
<td>Knowledge of orphan works</td>
<td>8 (29.6%)</td>
</tr>
<tr>
<td>Performing licensing services</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Handling permission requests</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Campus copyright policies</td>
<td>3 (11.1%)</td>
</tr>
</tbody>
</table>

Source (Field Survey, 2019)

4.8 LIBRARIANS’ KNOWLEDGE OF RESEARCH DATA MANAGEMENT SERVICES

Data management involves services, tools and infrastructure that support the management of research data across the research lifecycle. Generally, it requires a high level of interaction with researchers and also working with other support services including technical services and research officers. This section of the study sought to determine the knowledge respondents had concerning services, tools and infrastructure that are used in the management of research data. The respondents were therefore asked to rate their knowledge on data management services on a scale of 1 – 4, where, 1 – basic, 2 – intermediate, 3 – advanced, and 4 – none.

4.8.1 Data Description and Storage

In the execution of data description and storage services, academic librarians may collaborate with researchers and technical services librarians to develop and apply metadata schemata to data sets and collaborate on the development of technical solutions to preserve and share data sets.
Respondents of the study were asked to rate their knowledge of data description and storage. In response, 5 (18.5\%) of the respondents indicated that they had a basic knowledge of the subject matter, 11 (40.7\%) indicated that they had intermediate level knowledge whiles another 11 (40.7\%) stated that they have advanced level knowledge about data management services.

4.8.2 Data Management and Planning
Also, the respondents were asked about their knowledge on data management planning. In response, 6 (22.2\%) stated that they had a basic level knowledge, 15 (55.6\%) also indicated that they had an intermediate level knowledge whiles 6 (22.2\%) stated also that their knowledge about data management planning was advanced.

4.8.3 Knowledge of Open Source and Hosted Data Repository Solutions
The respondents were asked about their knowledge of Open Source and hosted data repository solutions. This was done in order to determine whether the respondents were aware of the capabilities of general data- specific repositories or subject-specific repositories and whether these repositories are able to support data management activities. In response, 5 (18.5\%) of the respondents stated that they had a basic knowledge about open source and hosted data repository solutions, 17 (63.0\%) also stated that they had intermediate level knowledge about the phenomenon whiles another 5 (18.5\%) indicated that they had advanced level knowledge about the subject matter.

4.8.4 Performing Licensing Services
Moreover, the respondents were asked to rate the knowledge they have with regards to performing licensing services. In response, 2 (7.4\%) indicated that they had basic knowledge, 17
(63.0%) also indicated that they had intermediate knowledge whiles 6 (22.2%) also showed that they have advanced knowledge about performing licensing services.

4.8.5 Handling Permission Requests

Furthermore, the respondents were asked to rate the knowledge they have on handling of permission requests. Responding to this, 6 (22.2%) stated that they had a basic knowledge about the phenomenon, 12 (44.4%) of the respondents also stated that they had intermediate knowledge about permission request handling whiles 8 (29.6%) of the respondents also indicated that they have advanced level knowledge about handling permission requests.

4.9.6 Campus Copyright Policies

Last but not the least, the respondents were asked about how conversant they are with the copyright policies of their institutions. In response, 3 (11.1%) stated that they had a basic knowledge about the copyright policies of their campuses, 8 (29.6%) also stated that they had an intermediate level knowledge, whiles 15 (55.6%) also indicated that they had advanced level knowledge about the copyright policies of their respective campuses. This suggest that majority of the respondents of the study were in a position to adequately guide users of their libraries on the best practices to perform in order to avoid being caught in plagiarism related issues. Table 4.7 typifies the above findings:
## Table 4.7: Librarians’ knowledge of research data management

<table>
<thead>
<tr>
<th>Research data management services</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic F (%)</td>
</tr>
<tr>
<td>Data description and storage</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>Data management planning</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Knowledge of open source and hosted data repository solutions</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>Performing licensing services</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Handling permission requests</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Campus copyright policies</td>
<td>3 (11.1%)</td>
</tr>
</tbody>
</table>

Source (Field Survey, 2019)

### 4.9 Librarians’ Personal Skills

The 21st century academic and research community is characterized by events changing at a very fast pace due to the introduction and application of ICTs. Academic librarians must therefore brace themselves to deal with this fast-paced situation. In addition to acquiring skills which are necessary to satisfy the information needs of users of libraries, academic librarians must also develop some critical personal skills which will help them in their relationships with their clientele as well as colleagues in the academic community.

This section of the study sought to investigate how the respondents of the study rate their stated personal skills (collaboration, communication skills, enthusiasm/collaboration, adaptable to change, personable, generalist). The respondents were required to rate their personal skills on a scale of 1 – 5, where, 1 – very strong, 2 – strong, 3 – good, 4 – weak, and 5 – none.
4.9.1 Collaboration

Collaboration means working with other people, institutions, units, departments, etc. to achieve a set objective or target. On the issue of collaboration, 16 (59.3%) of the respondents rated their ability to collaborate with necessary stakeholders as very strong, 7 (25.9%) also rated theirs as strong and 4 (14.8%) also rated theirs as good. This finding suggests that the respondents of the study understood the importance of collaborating with other stakeholders in the research lifecycle and such work with them to achieve set objectives.

4.9.2 Communication skills (Oral and Written)

On the issue of communication skills (oral and written), 15 (55.6%) of the respondents indicated that they had a very strong communication skills, 5 (18.5%) indicated that they had strong communication skills whiles 7 (25.9%) also rated their communication skills as good.

4.9.3 Enthusiasm/Ambition

In order to determine if the respondents were enthused about their work and are also ambitious, they were required to rate their level of enthusiasm/ambition. 17 (63.0%) of the respondents stated that they had very strong enthusiasm/ambition towards their work, 2 (7.4%) rated theirs as strong whiles 8 (29.6%) rated theirs as good.

4.9.4 Adaptable to Change

The ambiguous nature of scholarly communication in particular and academia in general calls for a librarian who is flexible and accepts change. The respondents were asked to rate their ability to adapt to change. 18 (66.7%) rated their ability as very strong, 4 (14.8%) rated theirs as being strong and another 5 (18.5%) also rated theirs as good. The climate of scholarly communication
is always changing, therefore, academic librarians must adapt to the changing conditions and expectations which exist at their various institution (Schmidt and Shearer, 2016).

4.9.5 Personable

 Respondents of the study were asked to rate how pleasant they appear and behave towards their clientele. Responding to this question, 11 (40.7%) of the respondents stated that they had a very strong pleasant appearance, 5 (18.5%) rated theirs as strong while 10 (37.0%) also rated themselves as good. A librarian having a pleasant attitude towards the clientele will ultimately leave a lasting impression which will be that of goodwill.

4.9.6 Generalist

 Academic librarians have a responsibility to familiarize themselves with the numerous environments of scholarship. This will ultimately help them to be effective in assisting researchers of all backgrounds. Against this background, the respondents were asked to rate their strength as generalists. In responding to this, 10 (37.0%) rated their strength in connection with this skill as very strong, 2 (7.4%) rated theirs as strong whiles 9 (33.3%) also rated theirs good.

4.10 STAFF TRAINING

 This section of the study sought to ascertain the methods the various libraries use to train their staff on some stated areas of competencies which included institutional repository management, open access management, publishing services, copyright services, assessment and impact metrics and the management of research data. The methods of training which were available to the respondents were formal education, on the job training, self-directed learning and attending continuous professional development programs (CPDs).
4.10.1 Institutional Repository Management

On the issue of the management of institutional repositories, 11 (40.7%) of the respondents indicated that their libraries used formal education to train their staff, 13 (48.1%) also stated that their libraries use on the job training as a means to train their staff whiles 3 (11.1%) also made it clear that their libraries train them through attendance of continuous development programs.

4.10.2 Open Access Management

Again, on the issue of open access management, 15 (55.6%) of the respondents of the study stated that their libraries trained staff through formal education, 5 (18.5%) also stated that their libraries trained staff on open access management through on the job training, 2 (7.4%) also indicated that they acquired their training through self – directed learning whiles another 5 (18.5%) also stated that they acquired their training on open access management by attending CPDs.

4.10.3 Publishing Services

Also, the respondents were requested to state how they trained on offering publishing services. Responding to this, 13 (48.1%) respondents stated that they acquired their training through formal education, 6 (22.2%) respondents also stated that they acquired their training on the job, 2 (7.4%) stated that they acquired their training through self – directed learning whiles 5 (18.5%) also acquired their training by attending CPDs.

4.10.4 Copyright Services

Furthermore, this section of the study sought to ascertain how the respondents of the study are trained to offer copyright services to their patrons. 16 (59.3%) respondents indicated that they trained through formal education, 6 (22.2%) stated that they acquired their training on the job whiles 5 (18.5%) also indicated that they acquired their training by attending CPDs.
4.10.5 Assessment and Impact Metrics

Respondents were again asked about how they acquired their training with regards to performing assessment and impact metrics. Responding to this question, 14 (51.9%) of the respondents indicated that they acquired their training through formal education, 6 (22.2%) also indicated that they acquired their training on the job, 1 (3.7%) also indicated they acquired their training through self–directed learning whiles 4 (14.8%) indicated that they acquired their training through attending CPDs.

4.10.6 Managing Research Data

The respondents were asked to state how they are trained on the management of research data. 14 (51.9%) indicated that they acquired their training through formal education, 6 (22.2%) indicated that they acquired their training on the job, 2 (7.4%) also stated that they acquired their skill through self–directed learning whiles 5 (18.5%) also acquired their skills through the attendance of CPDs. Table 4.8 exemplifies the findings above:

Table 4.8: Staff training

<table>
<thead>
<tr>
<th>Staff training</th>
<th>Methods of training (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Formal education</td>
</tr>
<tr>
<td>Institutional repository management</td>
<td>11 (40.7%)</td>
</tr>
<tr>
<td>Open access management</td>
<td>15 (55.6%)</td>
</tr>
<tr>
<td>Publishing services</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Copyright services</td>
<td>16 (59.3%)</td>
</tr>
<tr>
<td>Assessment and impact metrics</td>
<td>14 (51.9%)</td>
</tr>
<tr>
<td>Managing research data</td>
<td>14 (51.9%)</td>
</tr>
</tbody>
</table>

*Source (Field Survey, 2019)*
4.11 LEVEL OF EFFECTIVENESS

This section of the study sought to ascertain the level of effectiveness of the methods of training discussed in the previous section which are formal education, on the job training, self-directed learning and attending CPDs. The respondents of the study were required to rank the effectiveness of the stated methods on a scale of 1 – 5 where 1 is very effective, 2 – effective, 3 – neutral, 4 – not effective and 5 – not applicable.

4.11.1 Formal Education

On the issue of the level of effectiveness of the methods of training, it was discovered that 21 (74.1%) of the respondents rated formal education as very effective, 6 (22.2%) rated it as effective. This suggests that the respondents of the study overwhelmingly supported formal education as an appropriate method of training librarians to be abreast with latest trends in the profession.

4.11.2 On the Job Training

On the job training was deemed by 14 (51.9%) of the respondents as being a very effective method of training for librarians. A further 11 (40.7%) of the respondents also indicated that it was effective, 1 (3.7%) stated that it was neutral while another 1 (3.7%) also indicated that it was not effective.

4.11.3 Self – Directed Learning

On the issues of assessing the effectiveness of self-directed learning, 12 (44.4%) of the respondents indicated that they had neutral opinions on the subject matter, 6 (22.2%) also stated that self-directed learning was not effective as method of training for librarians. However, 2 (7.4%) also indicated that it was very effective whiles 4 (18.5%) also stated that it was effective.
This suggests that the respondents generally do not see self-directed learning as an appropriate method for training librarians.

4.11.4 Attending CPDs

On the issue of ascertaining the effectiveness of attending CPDs as a method of training academic librarians, 6 (22.2%) of the respondents indicated that that it was very effective, 15 (59.3%) also stated that it was effective. 2 (7.4%) of the respondents also stated that they had neutral opinions as to the effectiveness of the method whiles 1 (3.7%) also stated that it was not applicable.

4.12 ASCERTAINING TRAINING NEEDS OF ACADEMIC LIBRARIANS

In this section of the study, the respondents were asked an open-ended question which required them to state how their libraries ascertain the training needs of the librarians. Some of the responses which were given included the following:

- Through observation
- By having meetings with the staff to determine their training needs
- By holding conferences for the staff
- By assessing the staff

4.14 NEED TO DEVELOP COMPETENCIES

The respondents of the study were asked to state in their opinion, if librarians must develop core competencies to support scholarly communication. All the respondents, 27 (100%) stated in the affirmative. This suggests that the respondents of the study were fully aware that academic librarians play a very important role in the research life cycle and therefore must position themselves favorably to execute their roles.
A follow up open – ended question was asked to allow the respondents explain their choice on why academic librarians must develop core competencies and the following was some of the reasons given were:

- To help improve service delivery
- It will help satisfy the needs of users of the libraries
- It helps librarians stay updated with current trends on the issue of scholarly communication.
- Developing core competencies is vital to the scholarly communication process.
CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 INTRODUCTION
This chapter discusses the findings based on the objectives of the study. According to Annesley (2010:1671), discussing the findings of a study serves two major purposes. The first is that it helps to interpret and describe the significance of the findings in light of what was already known about the research problem under investigation and secondly, it also helps to explain new developments or an understanding that was discovered as a result of the study of the problem.

5.2 LIBRARIANS’ ROLE IN ACADEMIC RESEARCH
Academic librarians all over the world, through the processes of training and practice, are equipped with diverse techniques, skills and the requisite knowledge that are needed in the provision of relevant and timely information to support teaching, learning and research in various institutions of higher learning. This assertion supports the statement made by Sewell and Kingsley (2017) who opined that, the 21st century academic librarian does not only perform the role of curation of library materials but also performs research support roles. The performance of these research support roles enable academic librarians to help researchers make decisions concerning how to better manage and promote their intellectual outputs. Notable among these research support roles were; increasing access to information, promoting information literacy, digitization, virtual research environment management, institutional repository management, digital curation and preservation management, research data management. Others also included marketing and publicity of scholarly materials, promoting personal information management, ensuring copyright compliance, promoting open access scholarship, alert and tagging services, networking and collaboration, literature gap analysis.
5.2.1 Increase access to information

A very large majority of the respondents of the study 24 (88.9%) stated that librarians must increase access to information. This they do by guiding users of the libraries to variety of data formats which includes books (hard copies and soft copies), journals, online databases and other electronic contents. Almost all the libraries which were involved in the study had subscriptions to one online database or the other, thereby providing remote access to information to users at all times.

According to Schmidt et al (2016), librarians do not only manage varying types published information but also curate a wealth of information as well. It is therefore the duty of librarians to provide access to this world of information so that researchers and other information users alike can further explore as well exploit these stored information.

The holdings of every library must be set up in a way that it will meet the research focus of library users as well as the parent institution (Agyen – Gyasi, Lamptey and Frempong, 2010). In this regard, academic librarians must establish a working relationship with faculty members in order to help them decide the type of materials that can satisfy their research needs.

In their bid to increase access to information for their clientele, academic librarians instill information literacy and other related skills in their clients to help them navigate thoroughly through the world of information.

Another factor which has impacted on the access to information is ICT. The advent and use of ICT in the production and dissemination of information has impacted the fundamental characteristics of information which are accuracy, currency, relevance, reliability, authority and authenticity. In order to ensure the sanctity of information in the midst of chaos, academic
librarians must employ the use of ICT infrastructure such as computers, internet as well as training in order to provide a robust system of support for researchers. Most libraries also provide what has been termed as virtual library services for their patrons by offering them remote access to the holdings of their libraries through the OPAC (Online Public Access Catalogue). The OPAC has also transformed the traditional methods of cataloguing. Now, a librarian can import bibliographic details of various bibliographic items from other remote locations which in turn leads to a faster processing of library materials as well as circulation activities.

Also, Selective Dissemination of Information (SDI) is one of the strategies librarians adopt to help increase access to information for their respective library users. According to Sharma and Parasar (2014), the major aim of SDI is to bridge the gap between users of information and information resources. This is made possible by focusing on the specific information needs of a researcher and providing it in a timely manner. This role makes academic librarians very proactive in servicing the information needs of researchers. According to Barfi (2017:86), researchers on the other hand, are able to make recommendations for materials which are not available to be acquired. The librarians’ role of increasing access to information is being undertaken in all the selected institutions of the study.

5.2.2 Promote Information Literacy

Information literacy has been written about extensively by numerous authors. Several definitions have been formulated all in a bid to adequately articulate the meaning of information literacy. According to the Association of College and Research Libraries (2000:13), information literacy refers to the “ability to recognize when information is needed, the ability to locate the information, evaluate the information and use the information acquired effectively to solve a
problem”. An information literate person therefore is able to evaluate information and in the usage of it, apply all the necessary ethical considerations surrounding the usage of such information. According to Chen and Lin (2011), the past decade has seen most university libraries position themselves favorably to provide information literacy training programs to their patrons. This, in the view of Shenton and Fitzgibbons (2010) is an acknowledgment of the fact that increasingly, there is the need for students and researchers alike to familiarize themselves with how to properly search for information, evaluate it, use it for various academic work, and consequently, in all their activities thereafter. According to Belshaw (2011), information literacy has been seen as a very important element of digital literacy and the role of the library in promoting it has been very key to the relevance of libraries as a whole and librarianship as a profession in this digital era.

Equipping students with information literacy skills enables them to become lifelong learners. Also, it helps students to develop the ability “to locate effectively, evaluate critically, and incorporate information into their knowledge frameworks” (Cunningham and Lanning, 2002:344). In the view of Lloyn (2007:3), people who are information literate are “engaged, enabled, enriched and embodied by social, procedural and physical information”.

Responses from the study indicated that 23 (85%) of the respondents of the study indicated that librarians must play a role in promoting information literacy among their patrons. The librarians agree that through information literacy sessions, students are able to acquire all the necessary skills needed to effectively locate and evaluate information and information sources. Ethical consideration involved in the use of various information, referencing and citation skills, academic writing abilities are all introduced to students and researchers alike during information literacy sessions.
However, for the implementation of information literacy programs to be successful, there is the need for collaborative efforts between faculty, librarians and administration.

5.2.3 Digitization

Digitization has transformed the entire library landscape as well as the ways in which researchers and scholars alike access and use scholarly information. According to Shampa and Sashi (2014:221), “digitization is the process of transforming the information from documents such as printed book, picture or video into bits (bits are the fundamental units of information in computer systems)”. The Institute of Museum and Library Services (2002) also define digitization as “the process of converting, creating, and maintaining books, art works, historical documents, photos, journals, etc. in electronic representations so they can be viewed via computer and other devices.” Libraries the world over are vigorously converting the contents of their holdings from analogue, mainly in print, to digital contents (Rafiq, Ameen and Jabeen, 2018). Digitization of library materials helps to enhance the virtual presence of libraries.

The researcher anticipated that since digitization directly impacts on the activities of librarians as well as the very existence of librarianship, higher percentage of the respondents would have agreed to it being a role librarians must perform. On the contrary, less than half of the study respondents 10 (37%) strongly agreed to it whiles another 4 (14.8%) also agreed. This presupposes that librarians of the selected institutions must take a second look at their stance on digitization being a role academic librarians must perform.

5.2.4 Virtual Research Environment Management (VRE)

According to JISC (2006), Virtual Research Environment (VRE) is “a set of online tools and other network resources and technologies interoperating with each other to support or enhance
the process of a wide range of research practitioners within and across disciplinary and institutional boundaries”. Virtual Research Environment enhances cooperation between researchers and provide a platform through which research teams can collaboratively collect, manipulate and manage data. In other words, through VREs, researchers and research teams can collaboratively engage in the creation of knowledge. According to Sonnenwald et al (2009), Virtual Research Environments also known as collaboratories offer numerous benefits to researchers which include creation of new knowledge, solving complex problems, enhancing work practices, designing new services and products and educating students and making them lifelong learners.

In light of the above, 6 (22.2%) of the respondents of the study strongly agreed that academic librarians must engage in the management of Virtual Research Environments whiles another 12 (44.4%) also agreed. However, 3 (11.1%) expressed their neutrality on the role of academic librarians as managers of Virtual Research Environments.

5.2.5 Institutional Repository Management

The better part of the last decade or more have seen the rise in the establishment of institutional repositories by most institutions of higher learning all over the world. In very simple terms, institutional repository is a collection of all the scholarly works produced by an institution and its members. These scholarly works are mostly stored in electronic databases. Scholarly materials stored in databases include theses, journals, dissertations, artifacts, research findings, historical materials. Through the creation of institutional repositories, institutions can preserve their intellectual output for a very long time. In the view of Ghosh and Kumar (2007), the establishment of institutional repositories by various academic institutions is an indication of their willingness to promote open access to literature in order to advance the frontiers of
academic research and scholarship. Institutional repositories also help in the management and dissemination of digital materials created by members of an institution (Davis, 2007).

Majority of the respondents of the study 14 (51.9%) strongly agreed that librarians must play an integral role in the establishment and management of institutional repositories since it serves as the institutional memory which records and keeps all the scholarly outputs of the institution and its members. Another 5 (18.5%) also agreed that managing an institutional repository should be one of the roles academic librarians play.

5.2.6 Digital Curation and Preservation Management

Information produced digitally is increasing in folds. For these information to be used continually, it needs to be managed effectively and efficiently (Domo, 2017). According to Higgins (2018), for the past two decades, digital curation has developed as a new discipline from within the scope of Information Sciences. This new discipline, according to Tibbo (2012:2-3), “deals with the technical, administrative and financial ecology required to maintain access to digital materials through organizational and technical changes over long term.” Digital Curation Centre (2010a) summarizes data curation as involving the maintenance, preservation, and addition of value to digital research data throughout its lifecycle. It is however worthwhile to mention that, digital curation is just not one thing, it is a collection of many policies, practices, technologies and structures (Corrado and Moulaison, 2014).

The major aim of digital curation therefore, is to add value to research data so that it can continually be used and reused. Digital curation also facilitates remote access to curated materials.
The findings of the study revealed that only 5 (18.5%) of the respondents indicated that librarians must play the role of digital curators whiles 13 (48.1%) also agreed. Another 3 (11.1%) stated that they strongly disagree that academic librarians must play the role of Digital Curators. This finding implies that the idea of academic librarians undertaking the role of digital curators is not a popular one. However, since academic librarians are the custodians of research data, they must champion the call for the development of competencies in digital curation so that continuous access can be ensured for digital information in an era where technology easily gets obsolete.

5.2.7 Research Data Management

Research data management has been defined by the Oxford Research Data Management Glossary (2013), as “the process of managing research data and the services and policies that support these activities”. Council on Library and Information Resources (2013) also defines research data management as the services relating to organizing, managing, collecting, analyzing, publishing, reanalyzing, critiquing and reusing of data. Research data management therefore provide means of making digital-borne resources remain accessible, discoverable as well as easy to use for a long period of time (Pryor, 2012).

Research data management has become very important because various fields of studies are producing lots of research data at an unprecedented pace. The management of these research generated data is very vital in aiding the general advancement of scholarship. The management of research data has come up as a new area of which libraries and librarians have a lot of interest in. It therefore affords a very important opportunity for librarians to support the research lifecycle.
The findings of the study revealed that 9 (33.3%) of the respondents strongly agreed to the idea that academic librarians must be involved in research data management whiles 13 (48.1%) indicated their agreement of this assertion. A further 3 (11.1%) also strongly disagreed that academic librarians must not to be involved in the phenomenon.

5.2.8 Marketing and Publicity of Scholarly Materials

Marketing and publicity of library resources and services over the years has been part of the roles librarians play. Through marketing and publicity, patrons of libraries are made aware of the services libraries provide not the collection of the library alone. Services such as reprographic services, circulation, research support, selective dissemination of information and a host of others will be made known patrons and potential clients (Patil and Pradhan, 2014). Majority, 17 (63%) of the respondents stated that they agreed that librarians must market their services and collections.

Marketing allows for librarians to bring to the notice of library users, various materials which are available for them to read. This goes a long way to boost customer satisfaction and enhances the value of the perception people have concerning the services librarians offer.

During marketing research, librarians are able to gather insights into the potential needs, requirements and expectations of users for the libraries. Based on these insights, librarians are able to design tailored made solutions to suit different types of users with varying information needs. Based on this strategy, customer satisfaction is highly guaranteed.

5.2.9 Promote Personal Information Management

In this day and age, people come across different types of information for different purposes every day. These information are acquired from the internet, books, journals, magazines,
colleagues etc. These sources make people exposed to a lot of information which is more than they may need. Some of these information are gotten rid of immediately their use is over. Some are also kept for future use being it short term or long term decision making. In the opinion of Otopah and Dadzie (2013:144), it has become very integral that people are “equipped with the right attitudes, appropriate skills and tools to be able to effectively and efficiently create and manage their personal information collections.” Through this, people will be put in a situation where they are able to manage and without difficulties, locate useful information from their collections to be used for whatever purposes they deem fit. Jones and Teevan (2007:3), define Personal Information Management (PIM) as “both practice and the study of the activities people perform to acquire, organize, maintain, retrieve, use and control the distribution of information items such as documents, Web pages, and e-mail messages for everyday use to complete tasks and to fulfil a person’s various roles.

The findings of the study revealed that a total of 20 (74.1%) of the respondents indicated their support for academic librarians promoting personal information management. Librarians do this by organizing information literacy sessions for students. These sessions equip students to be able to “recognize the need for information and also determine the nature and extent of the information needed; find the needed information effectively and efficiently; critically evaluate information and the information seeking process; manage information collected or generated; apply prior and new information to construct new concepts or create new understandings and also use information with understanding and acknowledge the cultural, ethical, economic, legal, and social issues surrounding the use of information” (Bundy, 2004).
5.2.10 Ensure Copyright Compliance

The roles of libraries and librarians have verily evolved over the years. In recent times, libraries have become ‘information brokers’. Libraries have now come together to form international associations that are able to give their users access to online and digitized sources. Digitization has therefore led to new uses of copyright works on and off the internet (Sheat, 2004). Creators of various works have expressed concerns over the considerable diminishing of their rights through the introduction of digital technology. Governments and other stakeholders all over the world are working together to increase protection for copyright owners especially in this digital age so that creators of various works can also make a living from their works. A total of 24 (88.9%) of the respondents of the study stated that librarians as custodians of information must ensure that various users of information strictly abide by all copyright laws. One of the ways librarians do this, is by promoting the practice of ‘fair use’. Through this, libraries are able to copy extracts of copyright materials for users. However, 1 (3.7%) respondent strongly disagreed to librarians ensuring compliance to copyright regulations. This means that this percentage of the respondents do not see ensuring compliance to copyright laws as being their responsibility. This situation is discouraging. Librarians must assume the responsibility of educating their patrons on the issues pertaining to copyright laws. Reprographic staff of various libraries must also be educated so that in reproducing copies of materials, they don’t exceed the accepted limits.

5.2.11 Promote Open Access Scholarship

The Open Access Academy (2017:1), defines Open Access as “publications that are free to all interested readers, where the publishers place no financial or copyright barriers between the readers and the research output”. The idea of open access has become ever more important due to factors such as rapid increase in the prices of subscription based journals. Open Access has
therefore become an alternative avenue for acquiring information for both librarians and researchers. On the other hand, researchers are able to display their works freely with other members of the academic community. The study revealed that 13 (48.1%) of the respondents strongly agreed that librarians must promote open access publishing whiles a further 6 (22.2%) also agreed. In the view of these respondents, open access provides a very sustainable option that promise to resolve the financial crisis most libraries find themselves in. Also, 3 (11.1%) of the respondents indicated their neutrality of the subject matter whiles a total of 3 (11.1%) also indicated that they are against librarians promoting open access publishing. It is worrying that some academic librarians are against open access publishing.

5.2.12 Alert and Tagging Services

Alert and tagging services are mostly features which are included with scholarly databases or made available by journal publishers that allow a researcher to get a notification either by email or text message when a topic or an issue of interest to the researcher has been added to a database or published in a journal (University of Southern California, 2019). Alert services can be set up to notify you about newly published resources on a specific topic or when new articles are published in a journal. It was discovered that 6 (22.2%) of the respondents of the study stated that librarians must undertake the role of setting alerts and tags for researchers. Another 7 (25.9%) also agreed to this statement. However, a total of 8 (29.6%) of the respondents also indicated their disagreement to the statement that librarians must perform alert services for library users. The above figures suggest that many academic librarians of the institutions used for the study displayed minimal awareness about their role in setting up such an initiative. However, due to the large volumes of information produced daily all over the world, it is advised that
librarians take on this responsibility in order to help them contribute their part in advancing the course of scholarship.

5.2.13 Networking and Collaboration

Technological advancement has made it possible for people spread across large geographical regions to be able to work together to achieve tremendous goals. Librarians all over the world have taken advantage of this development as well. This has led to the formation of international Library Associations such as IFLA (The International Federation of Library Associations and Institutions), AfLIA (African Library and Information Associations and Institutions), ACRL (Association of College and Research Libraries), NASIG (North American Serials Interest Group), ARL (Association of Research Libraries), and CARLIGH (Consortium of Academic and Research Libraries, Ghana) etc. The formation of these associations has led to the exchanges of international best practices in the field Library and Information Science. Collaborations with other stakeholders in the scholarly communication chain like researchers, students, faculty, IT staff and others have also deepened. All these networks and collaborations are geared towards advancing the frontiers of research and knowledge discovery. The study revealed that a total 14 (51.8%) of the respondents indicated that they support the fact that librarians must network and collaborate in order to share ideas and knowledge to better serve their clientele. Conversely, 8 (29%) of the respondents also kicked against the idea that networking and collaboration are very paramount to librarians in performing their functions. This is a worrying situation because it suggests that the librarians who don’t support networking and collaborations are not members of various library and information associations in the country. This further suggests that knowledge and new trends in the field which would be discussed at workshops and seminars organized by
these associations would not be beneficial to these librarians. This will go a long way to negatively affect the quality of service which these librarians would offer to users of their library.

The study revealed that majority of the respondents are involved in partnerships. Most of the respondents are members of Ghana Library Associations and most of their libraries are also members of CARLIGH (Consortium of Academic and Research Libraries). These associations help them share expertise and resources among themselves.

5.2.14 Literature Gap Analysis
A gap in the literature can be considered to mean the area that has not yet been explored or is under-explored by researchers and other academics. To be able to identify gaps which exist in literature, an extensive literature review must be carried out. One must critically gather and read a wide range of literature which relates to the research topic in question in detail in order to identify gaps. Literature gap analysis help researchers and librarians alike identify research which has already been conducted, its coverage of the subject matter and also the trends which the research must follow. The findings of the study showed that 3 (11.1%) of the respondents strongly agreed that librarians must engage in literature gap analysis whiles another 7 (25.9%) also agreed. However, 5 (18.5%) of the respondents disagreed and another 7 (25.9%) also strongly disagreed respectively. This findings reveals that, a good percentage of the respondents of the study do not ascribe to the assertion that librarians must be involved in the process of identifying gaps which exist in literature. To them, it is the responsibility of the researcher to embark on the process of reviewing literature to identify gaps. Librarians can help in the process of gathering journal articles and other information resources which the researcher might need to aid him conduct his research.
5.3 LIBRARIANS KNOWLEDGE AND UNDERSTANDING OF SCHOLARLY PUBLISHING SERVICES

Scholarly publishing simply means publishing research results. In other words, “it is the published results of researchers who have gained new knowledge in their discipline by means of scientific theories and methods” (Jonkoping University Library, 2010). Scholarly publications consist of journal articles, books, research reports, conference papers etc. Publishing is a very key component of the research lifecycle. Through publishing, readers and other researchers are able to gain access into the mind of the researcher or the publisher. Readers are then able to comment, criticize as well as build upon the knowledge which has been published. Moreover, through publishing, the academic standing of the researcher in his/her field of practice is enhanced greatly which go a long way to increase ones chances of finding funding for future projects as well as employment (NorthCentral University Library, 2019).

This section of the study sought to investigate the competencies of the respondents of the study in some key areas of scholarly publishing which include: commercial and open access publishing platforms, editorial services, standards, funder mandates and requirements, metadata standards and recovery tools, licensing issues pertaining to open access, data curation and preservation practices and managing open access publishing software services. The respondents of the study were required to rate the level of their competencies from none to advanced.

5.3.1 Commercial and Open Access Publishing Platforms

The basic principle behind Open Access (OA) is that the publication of scientific research which takes the form of an article must be made available freely, without prohibitions to its use or cost, to everyone who wish to access it upon publication (Quinn, 2015). The principles of Open Access were established initially in 2002 during the Budapest Open Access Initiative. Since then,
Open Access has gained great momentum. According to Clobridge (2014), most research funding organizations as well as universities have added it to their mandates. This has led to the establishments of open access journals as well as numerous institutional repositories.

The findings of the study revealed that 11 (40.7%) of the respondents had intermediate level knowledge of commercial and open access publishing platforms. 7 (25.9%) indicated basic knowledge whiles 8 (29.6%) also indicated advanced knowledge of commercial and open access publishing platforms. This finding suggests that the respondents of the study were not very familiar with various publishing platforms. This situation is however, not encouraging, due to the fact that researchers most often than not, publish their research findings and it is the responsibility of academic librarians to advice these researchers on various publishing platforms which could be available to them.

5.3.2 Editorial Services

Academic libraries offer editing services for researchers. These editing services may be minor or in-depth. Libraries which offer editorial services may usually recommend modifications to improve posters, manuscripts, slide decks and others. Library editorial services may also include spell check, usage of words, punctuations grammar, table checks etc. The findings of the study revealed that 15 (55.6%) of the respondents stated that they had intermediate knowledge of editorial processes whiles 5 (18.5%) also indicated that they have advanced knowledge in editorial processes. This finding also suggests that majority of the respondents of the study were not deeply rooted in various editorial processes which support scholarly communication.
5.3.3 Standards (DOI, ISSN, ISBN etc.)

Standards also known as publication identifiers are used to find information about a publication. For instance, ISBN (International Standard Book Number) is used to identify both printed and digital books. They also serve as inventory tracking purposes. A DOI (Digital Object Identifier) is also used mostly in journals. Each article in every journal has its own DOI. The composition of a DOI is numbers and letters as well as punctuations. ISSNs (International Standard Serial Number) helps to identify serial publications such as magazines, journals, newspapers and databases. Generally, librarians advice researchers on how to acquire these publication identifiers for their published works. The study showed that 6 (22.2%) of the respondents had basic knowledge about standards whiles 8 (29.6%) of the respondents also indicated that they had advanced level knowledge about standards.

5.3.4 Funder Mandates and Requirements

Sponsors of various research activities have requirements which publishers and researchers must comply with. For example in 2013, the White House’s Office of Science and Technology issued a policy which directed all federal agencies that provide hundred million dollars or more in research funding to come up with plans requiring grant recipients to share the results of their research with the public. Academic librarians are therefore expected to be familiar with various funding agencies and their mandates/requirements. The study revealed that the majority of the respondents 11 (40.7%) had a basic knowledge on various funding agencies’ and their requirements. Another 7 (25.9%) had intermediate level knowledge whiles 3 (11.1%) had advanced level knowledge. This finding suggests that majority of the respondents of the study did not have in-depth knowledge of funder mandates and requirements. This situation puts into question, the ability of academic librarians to advise researchers on the right steps to follow in
seeking for funding to embark on their research activities. Based on the findings of the study, academic librarians must make conscious efforts at equipping themselves with relevant knowledge of various funding agencies and their respective requirements so that they can be in a better position to direct researchers on the best possible steps to follow.

5.3.5 Metadata Standards and Recovery Tools

“Metadata is data that describes data. It is the document that accompanies the research data which makes it discoverable and usable over time. Metadata standards exist to provide standardized description. Through the use of metadata standards such as Dublin Core, computer software is then able to recall and combine metadata from several sources” (University of Western Australia, 2019).

The findings of the study revealed that 16 (59.3%) of the respondents indicated that they had basic knowledge in metadata standards, 7 (25.9%) also had intermediate knowledge whiles just 3 (11.1%) also had advanced knowledge. The results suggest that majority of the respondents did not have comprehensive knowledge on metadata standards and recovery tools. Majority of the respondents had basic knowledge which mostly is not enough to adequately describe the contents of document.

5.3.6 Licensing Issues Pertaining to Open Access

The study revealed that 13 (48.1%) which represents majority of the respondents had basic knowledge of issues pertaining to licensing of scholarly works in the open access environment. Another 6 (22.2%) of the respondents had intermediate knowledge. A further 7 (25.9%) stated they had advanced knowledge of licensing issues pertaining to open access. This finding is not too encouraging since academic librarians are required to know licensing issues so that they can
educate researchers on the best possible deals to agree to when they are negotiating terms with publishers of their works.

5.3.7 Data Curation and Preservation Practices

The University of Illinois’ Graduate School of Library and Information Science as cited by Knight (2017) defines data curation as “the active and ongoing management of data through its life cycle of interest and usefulness to scholarship, science, and education. Data curation activities enable data discovery and retrieval, maintain its quality, add value, and provide for reuse over time, and this new field includes authentication, archiving, management, preservation, retrieval, and representation”. The study revealed that 13 (48.1%) of the respondents stated that they had basic knowledge of data curation and preservation practices while 5 (18.5%) also stated that they had advanced level knowledge of the practice. As the definition of data curation clearly states, academic librarians must be actively involved in managing data throughout its life cycle. Since information professionals are the custodians of information in all formats, rigorous attempts must be made by these custodians so that the quality and value of information can be maintained at all times.

5.3.8 Manage Open Access Publishing Software Services

There are numerous Open Access Publishing Software. They include DiVA, DPubs, Scholastica, Scribus, SOPS, and a host of others. Depending on the particular type which a library uses, it is generally expected that librarians must be equipped with the necessary knowledge needed to be able to guide researchers in the use of the system. Librarians are expected to provide technical support to researchers. Even though the level of service support provided may differ, services such as troubleshooting for publications, initial set up, adding contents, maintaining web pages for authors and editors, are mostly performed by librarians. In
instances where a library uses a hosted solution, librarians mainly collaborate with the hosting agency to provide technical and other support services. It was discovered that 8 (29.6%) of the respondents of the study stated that they had in-depth knowledge on managing open access publishing software whiles 11 (40.7%) stated that, their knowledge on the management of open access publishing software is at the basic level.

5.4 LIBRARIANS KNOWLEDGE OF OPEN ACCESS REPOSITORY

According to OpenAIRE (2018) an open access repository is a database or a virtual archives established to collect, disseminate and preserve scientific output like scientific articles and databases and make them freely available. Repositories can be institution specific (Institutional repository) or subject specific (Subject repository). In the development, management, and advocacy of institutional repositories, librarians play key roles. To be able to properly manage a repository of any kind, one must have a comprehensive understanding of the goals which the institution have for the repository. Again, one must be well versed in best practices in the following areas: content description and recruitment and provision of technical support and other infrastructure. This section of the study sought to investigate the competencies of the respondents of the study in some essential areas of the management of open access repositories. These areas included: open access policies and requirements, repository software, metadata standards and recovery tools, data formats, database design, data management, data manipulation tools, data curation and preservation practices, copyright and licensing issues pertaining to scholarly content, manage repository platform and update software, liaise with publishers on issues such as archiving policies and manage open access publishing software services.
5.4.1 Open Access Policies and Requirements

There are several policies that mandate open access. They range from institution policies to funders or sponsoring agencies’ policies. Authors must be aware of the various policies which guide the operations of the environment they operate in. Academic librarians, as part of their duties in the management of open access, must be aware of various policies of funders and publishers so that they can guide researchers on the best course to take when publishing. Results from the respondents of the study showed that 16 (59.3%) had intermediate knowledge on open access policies whiles 9 (33.3%) also stated that they had advanced knowledge about it. Knowledge and awareness of academic librarians on policies and requirements which regulates open access initiatives is very key.

5.4.2 Repository Software, Metadata Standards and Recovery Tools

Repository software are generally either hosted or open source. An institution may decide to opt for one of the two types. The extent of knowledge and understanding which academic librarians who operate various repositories must display largely depends on the type of software that has been installed and type of technical staff who are available to provide support for the system. Academic librarians are also expected to have the ability to apply appropriate metadata schemata mainly for the description of the contents of the repository. Academic librarians may do this by collaborating with other technical staff and researchers. The study revealed that 19 (70.4%) of the respondents of the study stated that they had an intermediate level knowledge about repository software, metadata standards and recovery tools whiles 4 (14.8%) indicated that they had advanced level knowledge on the subject matter. This signifies that majority of the respondents of the study depended largely on technical support staff when it comes to managing repository software and its associated roles.
5.4.3 Data Formats, Database Design and Data Manipulation Tools
Data formats, database design, data management, data manipulation tools are technical activities which are associated with open access repository management. Even though academic librarians are expected to perform these duties, they usually do it in collaboration with the technical staff who also operate the system. The study revealed that 16 (59.3%) of the respondents indicated that they had an intermediate level of knowledge on data formats and its associated roles.

5.4.4 Data Curation and Preservation Practices
The study revealed that majority of the respondents of the study 13 (48.1%), had a basic understanding of preservation and data curation practices. Another 9 (33.3%) had intermediate level knowledge on the subject matter. This finding suggested that the respondents of the study did not have in-depth knowledge on the best practices concerning the preservation of various library materials and resources. This is contrary to the assertion that librarians are custodians of library materials and must ensure the protection and longevity of the materials they are in charge of.

5.4.5 Copyright and Licensing Issues Pertaining to Scholarly Content
It was revealed that 12 (44.7%) of the respondents had advanced knowledge about copyright and licensing issues pertaining to scholarly content. A further 11 (40.7%) also had intermediate knowledge the subject matter. This finding is very encouraging since it shows that academic librarians are in a position to guide researchers on copyright issues.

5.4.6 Manage Repository Platform and Update Software
The most common software which are used to set up open access repositories are, DSpace, EPrints and Digital Commons. Digital Commons is a commercially hosted platform which is
used by many academic institutions, research agencies and centers, public libraries and a host of others. DSpace is also an open source repository software pack that is normally used to set up open access repositories which hold scientific and other scholarly contents which are digital in nature. DSpace provide a platform which offers storage, access and preservation of materials digitally in the long term. EPrints, likewise, is an open source software package used in setting up open access repositories.

The extent to which academic librarians perform the role of managing repository platforms and updating the software is mostly dependent on the existing protocols in the institution. Majority of the respondents 17 (63%) indicated that they had an intermediate knowledge on repository management whiles 7 (25.9%) also stated that they had advanced knowledge in repository management.

In some cases, there are technical support staff who perform the technical duties of managing the repository and updating its software whiles the librarians perform the administrative role of liaison with users of the repository.

5.4.7 Liaise with Publishers on Issues such as Archiving Policies

There are different publisher policies regarding archiving in open access. For example SHERPA/RoMEO uses color classifications which helps authors know the types of permissions they are entitled to when it comes to archiving their works. The colors are

1. Green which signifies that an author can archive pre-print and post-print or publisher’s version/PDF.
2. Blue also signifies that an author can archive post-print i.e. final draft post-refereeing or publisher’s version/PDF
3. Yellow which means that an author can archive pre-print i.e. pre-refereeing.

4. White which means archiving of any kind is not supported (Pinfield et al. 2014).

Majority of the respondents of the study 14 (51.9%) indicated that they had an intermediate knowledge on liaising with publishers to obtain favorable archiving permissions. A further 6 (22.2%) also stated that they had basic knowledge whiles 5 (18.5%) also showed that they had advanced knowledge and understanding of liaising with publishers on issues such as archiving policies. Knowledge of archival policies of publishers equips librarians to guide researchers and authors to determine which publishers to publish with. It also enables librarians help authors and researchers seek for amendment to their various publishing agreement.

5.5 LIBRARIANS’ KNOWLEDGE OF ASSESSMENT OF SCHOLARLY RESOURCES AND IMPACT METRICS

Traditionally, academic librarians have taken on the role of helping authors and researchers determine the impact of their publications. Academic librarians are able to do this mostly through what is called citation counts and journal impact factors. In recent times however, alternative means of checking the impact of academic works has been developed. This has been broadly referred to as altmetrics (Malone and Burke, 2016). “Besides citation counts, through altmetrics, a researcher or an author is able to track the impact of their individual research articles and other forms of scholarly output via media attention, article views and downloads, database inclusion, and more” (Cooper, 2015:217). This section of the study examined the knowledge that academic librarians had of established and emerging research metrics.
5.5.1 Assessment Criteria for Journals and other Resources

In order to adequately determine the quality and value of a research publication, one must be conversant with various criteria which are used in the assessment of information resources. It is therefore, expected of librarians to have in-depth understanding and knowledge of various criteria which are used to assess the quality of various publications. The study revealed that, 12 (44.4%) of the respondents indicated that they had an intermediate knowledge of assessment and impact metrics whiles another 12 (44.4%) also indicated that they had advanced level knowledge about such metrics. This indicates that majority of the respondents had knowledge about the various metrics used to access the value of journals, articles and other information resources alike.

5.5.2 Bibliometrics and Altmetrics Theory and Practice

“Bibliometrics are a range of quantitative measures that assess the impact of research outputs. Bibliometrics complement qualitative indicators of research impact such as funding received, number of patents, awards granted and peer review. Together they assess the quality and impact of research” (University of Leeds, 2019). Bibliometrics can be used to determine journals in which to publish as well as identify new and emerging areas of research. Bibliometric measures include citation counts, H-index, field-weighted citation impact, journal impact factor etc.

“Altmetrics on the other hand could be referred to as an upgrade of bibliometrics. It goes beyond traditional citation-based indicators and raw usage factors such as downloads or click-through numbers. Instead it explores readership, diffusion and reuse indicators that can be tracked via blogs, social media, peer production systems, collaborative annotation tools, including social bookmarking and reference management services. Altmetrics basically gathers all discussions that are significant to a particular article from social media platforms such as Facebook, Twitter,
blogs and other platforms such as mainstream media outlets and other portals. Under altmetrics, articles are given scores which is a measurement of the quality and quantity of attention the particular article has accrued for itself”.

The finding of the study showed that majority of the respondents had a general idea concerning what altmetrics and bibliometrics are, 10 (37%) basic knowledge and 9 (33.3%) intermediate knowledge respectively. Librarians must endeavor to equip themselves with knowledge on bibliometrics and altmetrics so that they can help researchers track the performance of their articles. This enables librarians help researchers choose the types of journals they can publish in to enhance the visibility and impact of their various research works.

5.5.3 Institutional Assessment of Scholarly Output

Various academic institutions have standards or criteria which they use to evaluate or assess scholarly output. Academic librarians of these various institutions must know very well, the various assessment criteria which are used to assess various research outputs. Majority of the respondents of the study 14 (51.9%), indicated that they had advanced knowledge on the criteria their institutions use in assessing scholarly materials. Another 8 (29.6%) also indicated that they had intermediate level knowledge about the evaluation criteria of their institution.

5.5.4 Provision of Support to Faculty in Assessing Scholarly Resources

As part of activities involved in performing their roles, librarians are generally expected to provide support to faculty in assessing scholarly materials. This will enable faculty members to determine materials which have the scholarly worth to be used for academic activities. A very large majority of the respondents of the study 20 (74.1%) indicated that they provided adequate support for their faculty members in assessing or evaluating scholarly materials as well as
accessing these resources. A further 5 (18.5%) also stipulated that they had intermediate knowledge in providing support for faculty in evaluating scholarly materials.

5.5.5 Provision of Advice to Library Acquisition Department on Quality Indicators

In collaboration with acquisitions department, academic librarians are able to make inputs into determining the type of materials which must be bought for the use of the library. These materials may include both hard and soft copies as well as online resources. Academic librarians may provide advisory services on issues such as quality indicators in order to help acquisitions determine the best materials to acquire for the use of library patrons. The study revealed that 20 (70.4%) of the respondents stated that they provided advice to their library’s acquisitions department on quality indicators in determining the best materials to obtain for the library. This suggested that academic librarians work closely with their various acquisitions librarians.

5.6 LIBRARIANS’ KNOWLEDGE OF INSTITUTIONAL REPOSITORY MANAGEMENT

Johnson (2002) defines Institutional Repository as “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside the institution, with few if any barriers to access”. Institutional Repository can therefore be thought of as service, provided by an institution to its members for the management and dissemination of scholarly works created by members of the institution (Jeelani, Mir, Wani, 2016). In the view of Gibbon (2004), Institutional Repositories generally provides an infrastructure and permanence to digital contents that can withstand changes over a long period of time.
5.6.1 Ability to Apply Publisher Policies on Archiving

In an IR management environment, a deep knowledge and understanding of copyright issues is very pertinent, especially applying publisher’s policies on archiving. Majority of the respondents of the study 13 (48.1%) indicated that they had an intermediate knowledge on applying publisher policies on archiving in the context of institutional repository management. However, this is not encouraging at all. Academic librarians in charge of institutional repositories must demonstrate a very high level of knowledge in publisher policies especially on copyright issues. According to NASIG (2017), academic librarians must have a thorough knowledge generally about copyright, copyright transfer agreements and have the ability to fully understand the terms of the agreements and explain them to researchers.

5.6.2 Ability to Apply Metadata Schemata

Working in close collaboration with the technical staff and other research partners, academic librarians in charge of institutional repositories must be able to appropriately apply metadata schemata. As new methods of interoperability has come to exist among repositories, academic librarians must put on this role now more than ever. The study revealed that 15 (55.6%) of the respondents had intermediate level knowledge on applying metadata schemata whiles 11 (40.7%) also had basic knowledge. None of the respondents had advanced knowledge on the subject matter. This situation is however understandable. This is because this function is mostly reserved for technical support staff of the repository (NASIG, 2017).

5.6.3 Ability to Collect, Store, and Preserve Institutional Intellectual Output

Academic librarians are generally expected to have knowledge of their institution’s strength especially with regards to conducting research and also the learning outcomes of their students. This knowledge will equip them to be able to anticipate the research and other scholarly outputs
of members of their institutions. The study indicated a very large majority of the respondents 22 (81.5%) had the ability to collect, store, and preserve institutional intellectual output. This finding corroborates the assertion made by Schmidt et al (2016) that, librarians do not only manage a wide variety of information, but they also provide access to a very large world of information.

5.6.4 Knowledge of Repository Solutions

Repository solutions could be hosted or open source. Either way, academic librarians who operate institutional repositories must have a broad knowledge of them. The study revealed that 14 (51.9%) of the respondents stated that they had advanced knowledge and understanding of various repository solutions. A further 9 (33.3%) also stated that they had an intermediate level knowledge on repository solutions. According to Malone and Burke (2016), the level of understanding a librarians has about a repository solution is dependent on certain factors. They include: the type of repository solution installed in a particular institution, the extent to which the librarian is in charge of managing the solution, and the number and level of knowledge of technical staff available to operate the repository.

5.6.5 Ability to Develop Policies

“In association with other librarians, researchers, general counsel, management of institutions, academic librarians contribute immensely to the development and implementation of policies which relate to collection development, copyright and services, open access etc. The study revealed that 11 (40.7%) of the respondents of the study had intermediate and advanced knowledge on policy development. Policies establish a standard for services that can be understood by users of the service and providers. According to ALA (2019), “policies ensure equitable treatment for all, and polices provide a framework for delivery of services”. Before
library policies can be enforceable, they must be consistent with local, national and international laws”.

5.6.6 Reporting Statistics in Support of Outreach and Education

In the usage of institutional repositories, usage statistics are generally generated. These statistics are mostly used for outreach, instruction and promotional purposes. The study revealed that 15 (55.6%) of the respondents had advanced knowledge in reporting statistics to support outreach and education. A further 7 (25.9%) of the respondents also had intermediate knowledge in generating statistics to support outreach and education. According to NASIG (2017), the extent to which academic librarians are responsible for generating the said statistics is largely dependent on the knowledge the librarian has about repository solutions.

5.7 Librarians’ Knowledge of Copyright Services

Daily activities of librarians and other information professionals require them to undertake certain activities which fall within the purview of copyright laws. Some of these activities may comprise of “photocopying and scanning materials, copying software or offering it for multiple users, downloading or incorporating music into presentations and course management systems, negotiating permissions with others for the use of their content, interpreting digital content licenses with third parties” (copyrightlaws.com, 2019). It is therefore required of librarians to have a very comprehensive knowledge about copyright issues both locally and internationally. This knowledge will go a long way to help them effect compliance of various copyright regulations. Even though some libraries and other information centers have dedicated copyright specialists, it is expected that all academic librarians have a good knowledge about copyright and related issues. This section of the study sought to investigate the knowledge and understanding of the respondents in the area of copyright and related matters.
5.7.1 Knowledge of Pertinent National Copyright Law

Around the world, copyright laws vary from jurisdiction to jurisdiction. There is no straightforward copyright law. This situation, makes various copyright laws very interpretative. “Librarians must apply their particular facts to the law to determine when and whether permission is needed to use copyright materials” (copyrightlaws.com, 2019). The results of the study indicated that a very large majority of the respondents 20 (74.1%) were aware of the pertinent copyright laws in the country. This shows that these academic librarians are able to make judgement calls with regards to copyright issues such as fair use, exemptions, etc.

5.7.2 Understanding of Authors Rights

Authors have rights as copyright holders of their works. However, in cases where authors have to publish their scholarly works, most of them, mostly out of ignorance sign away their rights as copyright holders of their work to publishers. This prevents the authors from determining the subsequent usage of their works. The finding of the study revealed that 20 (81.5%) of the respondents indicated that they had advanced knowledge and understanding of authors rights. This finding corroborates with a statement made by the Association of College and Research Libraries (2019) that librarians must therefore become the go to people who must provide information on this issue. Librarians must also take it upon themselves “to educate faculty, staff and students on their rights as authors and what measures they can take during copyright amendment, archiving and open licensing to preserve the rights to reuse their scholarship and ensure that it is accessible and usable”.

5.7.3 Knowledge of Orphan Works

Orphan works are works or materials that have copyright protection but the author of the said work is not known or even impossible to locate. Various reasons may account for a work being
orphaned. They may include; the author may not be known publicly, the work was anonymously published, owner cannot be identified etc. Researchers and other academics who mostly use orphan works are most often confronted with the dilemma of the possibility of being hit with a hefty fine in damages or face injunction being put on the work which could be developed from the orphaned work (Lifshitz – Goldberg, 2010). This creates a ‘lose-lose’ situation whereby neither the owner of the work nor the user of the work enjoy the potential benefits of the work.

5.8 LIBRARIANS’ KNOWLEDGE OF RESEARCH DATA MANAGEMENT

According to Whyte and Tedds (2016), research data management could be thought of as “data organization process throughout the entire research life cycle”. In the view of Cox and Pinfield (2014), “research data management includes a series of activities and processes in the research life cycle, including data construction and generation, storage, security, preservation, sharing, and reuse, as well as technical, moral, legal and regulatory issues”. In brief, research data management services help researchers and other information creators and users to organize, manage and curate research data so that its preservation and access is enhanced now and in the future. According to Matusiak and Sposito (2017), most University libraries all over the world are making efforts at providing research data services for researchers. This enables researchers to meet funder mandates of promoting open access scholarship. Matusiak and Sposito (2017) further state that, research data management services is an evolving area therefore, new programs and strategies are continually being designed in order to address equally technological challenges as well as needs of users.

This section of the study sought to evaluate the knowledge and understanding of the respondents on research data management services.
5.8.1 Data Description and Storage

Data description enables the researcher and all other information seekers who may want to use the information make sense of the data. Data description is an integral component of data management services. In describing and storing data, academic librarians may work together with researchers who are responsible for the generation of the data, librarians who are in charge of technical services and others in computing services departments in order to develop and apply appropriate metadata to data produced by researchers.

The findings of the study indicated that 11 (40.7%) of the respondents had intermediate knowledge on data storage and description practices whiles another 11 (40.7%) also had advanced knowledge on data description and storage practices.

5.8.2 Data Management Planning

A data management plan is a formal document which describes how a research is going to be done, how the research data will be managed throughout the research process and how the finding of the research will be shared with information seekers. In other words, a data management plan basically depicts how a researcher intends to collect, store, secure and share their research data. Research data management plan enables a researcher to easily identify key requirements of funding agencies and publishing bodies. Librarians can play a role in research data planning by advising researchers on the grant portions of such plans. Librarians are able to do this by collaborating with research offices of their various institutions as well as researchers at various faculties. The study revealed that 15 (55.6%) of the respondents of the study stated that had intermediate knowledge of data management services. A further 6 (22.2%) also stated that they had advanced level knowledge of data management services. According to NASIG (2017),
for librarians to be able to provide support on data management planning, there is the need for them to be familiar with various Data Management Planning Tools (DMPTools).

5.8.3 Knowledge of Open Source and Hosted Data Repository Solutions

Repository solutions could be hosted or open source. Either way, academic librarians who operate institutional repositories must have a broad knowledge of them. The study revealed that 5 (18.5%) of the respondents stated that they had advanced knowledge and understanding of various repository solutions. A further 13 (63.0%) also stated that they had an intermediate level knowledge of repository solutions. According to Malone and Burke (2016), the level of understanding a librarian has about a repository solution is dependent on certain factors. They include: the type of repository solution installed in a particular institution, the extent to which the librarian is in charge of managing the solution, and the number and level of knowledge of technical staff available to operate the repository.

5.8.4 Performing Licensing Services

Licensure services provided by academic librarians differ from institution to institution. In some academic institutions, academic librarians may be required to interpret an existing license for an already copyrighted material or draft licenses so that a particular material could be used. Academic librarians may also be required “to determine if there is an existing license for an item which has already been copyrighted either from a subscription license through the university or on a pay-per-use service through a collective rights organization or a corporation” (NASIG, 2017).

The study showed that 17 (63.0%) of the respondents had an intermediate level knowledge of the performance of licensing services. This finding corroborates the assertion of the American
Library Association (2019) that, licensing has become a very important topic for librarians especially in the digital age where agreements for access to electronic journals, databases and other electronic resources require licensing and other copyright clearances.

5.8.5 Handling Permission Requests

In a bid to help researchers avoid plagiarism and other copyright infractions, academic librarians are mostly called upon to handle permission requests to copyright holders so that researchers and other users can use their works. As a result, academic librarians must be able to help researchers draft permission requests or templates to be sent to various copyright holders. They must also be able to identify elements of requests for uses of materials that qualify as fair and those that do not qualify as fair. The study discovered that 12 (44.4%) of the respondents stated that they had intermediate level knowledge on handling permission requests whiles 8 (29.6%) also indicated that they had advanced knowledge on handling permission request. The finding shows that the respondents of the study must broaden the scope of their knowledge on permission requests since it will enable them help researchers to avoid committing copyright offences.

5.8.6 Campus Copyright Policies

Academic librarians must know the copyright policies of their various campuses. This is very important since they may be called on to provide guidance in the areas of understanding, usage and ownership of scholarly materials produced by researchers of their institutions. In some cases, academic librarians may be required to draft copyright policies for their institutions.

The findings of the study revealed that 15 (55.5%) of the respondents had advanced level knowledge of their campus copyright policies whiles 8 (29.6%) had intermediate level knowledge of their campus copyright policies. This finding corroborates the view of
Charbonneau and Priehs (2014) who stated that librarians’ having much knowledge on copyright policies is relevant in order to provide guidance to their users.

5.9 LIBRARIANS’ PERSONAL SKILLS

As traditional custodians of information, it is imperative that librarians develop certain skills (technological and managerial) which are needed to better manage the technological advancements of the twenty first century as well as the complex and advanced information seeking behaviors of researchers and other scholars. For librarians to show themselves approved in the satisfaction of these complex information needs of users, very essential skills and abilities must be developed. This section of the study sought to find out from the respondents, the strength of their personal skills in stated areas which include the following; collaboration, communication skills (oral and written), enthusiasm/ambition, adaptable to change, personable, generalist and others which the respondents could state.

5.9.1 Collaboration

To collaborate is to work together with institutions, departments, and individuals etc. to achieve a set objective or target. Collaboration allows otherwise seeming difficult or impossible tasks to be achieved without much difficulties. Collaboration could also be between local bodies as well international organizations (Atkinson, 2018). The findings of the study indicated that 16 (59.3%) of the respondents had strong collaborative skills. Another 8 (29%) of the respondents rated their collaborative skills as strong. These findings suggest that the respondents of the study fully appreciated the importance of working together with other actors in the library and information space as a really good initiative. Evidence of librarians and libraries working together has resulted in the formation of local associations such as the GLA (Ghana Library Association), CARLIGH (Consortium of Academic and Research Libraries, Ghana). Other international bodies
also include IFLA (International Federation of Library Associations and Institutions), ACRL (Association of College and Research Libraries), ARL (Association of Research Libraries), AfLIA and a host of others

5.9.2 Communication Skill (Oral and Written)

Communication is key in the work of academic librarians. This is so because it will allow the relay of information concerning the policies of the libraries as well as services and initiatives which the library has undertaken to assist researchers and other information seekers. Also, good communication skills is needed on the part of academic librarians to document clearly, information such as strategic plans of the library, the mission and vision statements of the library, publications such as articles and conference proceedings, formal emails etc. Development of oral communication is also very important because academic librarians, more often than not, engage in face to face interactions with researchers and also give talks at formal conferences and workshops. The study discovered that 15 (55.6%) of the respondents had very good communication skills. A further 7 (25.9%) of the respondents also had good communication skills. Considering the importance of good communication skills, academic librarians in particular must endeavor to acquire the skill to aid them in their daily activities.

5.9.3 Enthusiasm/Ambition

The Cambridge Advanced Learner’s Dictionary and Thesaurus (2019) defines enthusiasm as “a feeling of energetic interest in a particular subject or activity and eagerness to be involved in it.” Responding to this statement, 17 (63.0%) of the respondents stated that they had very strong enthusiasm towards their work. Another 7 (29.6%) of the respondents also had good enthusiasm towards their work. Librarians must have a high level of enthusiasm in their work. This enables
them to fully immerse themselves by striving to acquire the needed skills and knowledge needed to satisfy their patrons adequately.

5.9.4 Adaptable to Change

The field of scholarly communication in particular and academia in general is very turbulent. The applications of ICT and related technologies to library management have revolutionized the way librarians go about doing their work. This revolution has affected how librarians serve their mandate of providing timely and adequate information to their various clienteles. For librarians to continually stay relevant in this state of flux, they must be ready and willing to accept change as the only constant factor in this 21st century. The results of the findings showed that 18 (66.7%) of the respondents of the study had a very strong ability to adapt to change. This allows them to satisfy the ever changing information needs of various library users.

5.9.5 Personable

To be personable means to have a pleasant appearance and character (The Cambridge Advanced Learner’s Dictionary). It could also mean affable and friendly. It is very imperative among other things that librarians develop this trait. This is exactly so because persons who use various libraries may have very diverse backgrounds and personalities. It is incumbent on librarians to put up with all these different personalities of different people so that the research and other information needs of these people can be satisfied. The findings of the study revealed that 11 (40.7%) of the respondents were very friendly and affable. Another 10 (37.0%) also rated the level of their friendliness to library users as good. Even though this finding can be said to be satisfactory, it can equally be said that academic librarians must improve on this skill so that researchers and other scholars can get the best out of academic and research libraries.
5.9.6 Generalist

A generalist is a person who has diverse skills and knowledge in various activities. Academic librarians must therefore be familiar with the various academic environments. This knowledge will enable them position themselves favorably to assist researchers of all backgrounds to carry out their academic endeavors. The study revealed that 10 (37.0%) of the respondents rated their strength in this regard as very strong. Another 9 (33.3%) of the respondents rated theirs as good. This finding is not encouraging. This is so because librarians are supposed to have an appreciable amount of knowledge in various academic fields which will help to provide directed or focused services to various scholars. Academic librarians must therefore work assiduously to improve on this shortcoming.

5.10 STAFF TRAINING

Due to the constant state of flux in academia and user information needs, it has become mandatory that librarians in general continue to engage themselves in continuous professional development programs. These programs will help librarians get to know the latest trends in the field of library and information science concerning how things are done. In the words of Cooke (2011:2), “library professionals need to be savvy as the clients they serve, and the most productive and effective way for librarians to keep up with these changes is to seek out professional development opportunities.” The statement further continues that “librarians owe it to their clients and to themselves as competent professionals, to remain abreast of trends and developments in the field”. Staff training is therefore very important, therefore, libraries must provide the necessary support and platforms to their staff in this venture as it serves as one of the key components in the total development of an employee.
The following section of the study sought to find out how the libraries of the respondents, train their staff in the major areas of scholarly communication.

5.10.1 Institutional Repository Management

On the issues of how the libraries involved in the study train their staff with regards to the management of institutional repositories, three major means of training were stated by the respondents of the study. These were formal education, on the job training, and attendance of continuous professional development programs. Out of the total number of respondents, 11 (40.7%) stated that their libraries relied on formal education to train their staff with respect to the management of institutional repositories. Another 13 (48.1%) indicated that their libraries used on the job training to train staff to manage institutional repositories. Also, 3 (11.1%) of the respondents stated clearly that their institutions trained staff on institutional repository management by attending continuous professional development. Institutional repository management is a very specialized area therefore individuals who are involved in it must be trained using the best possible means to ensure that they acquire the requisite skills needed for it.

5.10.2 Open Access Management

The study revealed that libraries trained their staff on open access management using all the four identified mediums of training. Formal education recorded the highest percentage 15 (55.6%). This means that the libraries involved in the study trusted formal education as the best means to train their staff with respect to open access management. On the job training and attending continuous professional development programs had 5 (18.5%) respectively. Another 2 (7.4%) said that their libraries employed self-directed learning as the means of training staff on the management of open access.
5.10.3 Publishing Services

On the issue of training staff to offer publishing services to library users, it was discovered that 13 (48.1%) of the respondents said their libraries resorted to formal education to train their staff. This suggested that these libraries had much confidence in the formal education system to better train their staff to provide these services to library patrons. Another 6 (22.2%) of the respondents stated that they acquired their training on the job. This means that these librarians were either mentored by senior colleagues whiles working or they learnt by themselves. A further 5 (18.5%) of the respondents said they received training by attending continuous professional development programs. These programs could be organized by local library associations or international bodies working within the library and information science space. During such programs, practical experiences are shared by information professionals from various places and diverse backgrounds. Another 2 (7.4%) of the respondents stated that they acquired their training through self-directed learning. This implies that librarians in this category did not have access to formalized systems of training. They therefore resorted to training themselves in order to serve their users.

5.10.4 Copyright Services

On the issue of training staff to offer copyright services, it was found that 16 (59.3%) of the respondents of the study received their training through formal education. Others 6 (22.2%), received their training whiles they were on the job and 5 (18.5%) acquired their training through the attendance of continuous professional development programs. A careful look at the findings suggested that the libraries involved in the study did not permit their staff to train themselves with regards to performing copyright services to library users. This is as a result of the legal implications surrounding copyright issues. This better explains why the use of formal education
as a means of training librarians to offer copyright services had the highest percentage 16 (59.3%). Formal education equips librarians with knowledge in local and international copyright principles which helps them to ensure that various copyright infringements are avoided by information users or reduced to the barest minimum. Formal education also provides basic knowledge and understanding of copyright law and licensing of electronic resources.

5.10.5 Assessment and Impact Metrics

Academic impact is considered to be the impact that scientific research has within the academic sphere (Ravenscroft et al, 2017). Traditionally, to measure academic impact, measures such as per-author and per-journal citation counts are used. Other complex factors which have been developed in recent times include Journal Impact Factor (JIF) and h-index. On the training of library staff to offer impact and assessment metrics services to researchers and other authors, it was discovered that 14 (51.9%) of the respondents acquired their training through formal education. Another 6 (22.2%) acquired their training whiles on the job and 4 (14.8%) acquired their training by attending continuous professional development programs.

5.10.6 Managing Research Data

Measuring research data comprises of all the activities involved in controlling research generated information. On the issue of training staff to offer data management services, it was discovered that 14 (51.9%) received their training through formal education. Another 6 (22.2%) of the respondents indicated that they received their training whiles they were on the job. A further 5 (18.5%) said they acquired their training by attending continuous professional development programs. This service has become significant in the research process as many funding agencies now require researchers and scholars to have a plan concerning how they will manage their data.
As a result of this, librarians must position themselves strategically to assist researchers and other scholars in best practices with regards to data management.

5.11 LEVEL OF EFFECTIVENESS OF THE METHODS OF TRAINING

This section of the study sought to ascertain the level of effectiveness of the identified methods of training which were: formal education, on the job training, self-directed learning, and attending continuous professional development programs.

5.11.1 Formal Education

According to UNESCO (2011), “formal education is institutionalized, intentional and planned through public organizations and recognized private bodies and, in their totality, make up the formal education system of a country. Formal education programs are thus recognized as such by the relevant national educational authorities or equivalent”. Over the years, formal education has proven to be an effective method of training people for a wide variety of professions. The methods and procedures used in formal education training are systematic, focused and scientific, leading to its success in imparting knowledge and skills who adopt it as a means of training and learning.

The respondents of the study were required to rate the effectiveness of formal education as means of training library staff. The study showed that majority of the respondents 20 (74.1%) believed that formal education provided a very effective method of training for librarians. According to them, formal education did not only provide them with theoretical knowledge, it also offered them practical experiences which prepared them to adequately serve users of their various libraries. Another 6 (22.2%) of the respondents of the study also supported the notion that formal education was an appropriate method used in the training of librarians. They indicated that formal education was an effective method of training. These findings suggested
that librarians had very high confidence in Library Schools as a very preferred option for training various library staff.

5.11.2 On-the-Job Training
The work environment serving as a platform for continuing education and training cannot be overemphasized. On the job learning and training offers employees the chance to acquaint themselves with experiences and techniques anew which help to position them to perform their duties creditably. This method is very efficient at helping to motivate library staff and also get them to collaborate with existing schemes. This goes a long way to ensure higher performance as well as helping the library to attain its goals. While formal education provides people with the requisite knowledge needed for the world of work; on-the-job training also offers people knowledge which prepares them for situations in the practical world of work. On the effectiveness of this method as a form of training for employees, 14 (51.9%) of the respondents indicated that it was very effective, 11 (40.7%) also stated that it was effective. This finding corroborates with the assertion made by Jain (1999:283), who stated that on-the-job training “may be seen as a tool to professionalism and productivity.” On-the-job training could therefore be seen as an informal training which is offered at the workplace. The major objective of this provision is to enhance the efficiency, skills and productivity of the employee. It could also be used to correct a deficiency in the skills set of employees as well as imprint the implementation of a formal training program.

5.11.3 Self-Directed Learning
According to Knowles (1975:18), “self-directed learning describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning,
choosing and implementing appropriate learning strategies, and evaluating learning outcomes”.

Under self-directed learning, an individual identifies the need to learn on his own and makes personal and independent provisions to satisfy this need. Self-directed learning may arise from an individual’s realization that he lacks a particular skill or knowledge needed to perform a specific task which could be job related or not. Self-directed learning activities are very unorganized and highly informal. Unlike formal education, it does not result in the award of any certificate and there is lack of supervision as well. Also, the success of any self-directed learning activity largely depends on the commitment and determination of the individual involved.

The findings of the study showed that majority of the respondents of the study 12 (44.4%) stated that they were neutral with regards to the effectiveness of self-directed learning as a means of training librarians, 6 (22.2%) of the respondents indicated that self-directed learning as a means of training librarians was not effective. This corroborates the findings of Varlejs (1999:175) which stated that “despite the efforts to give attention to the importance of learning on one’s own, discussion, research, and literature on continuing library education seldom address the question.” Another 5 (18.5%) of the respondents however stated that it was an effective method of training librarians whiles 2 (7.4%) said self-directed learning was a very effective method of training librarians.

5.11.4 Attending Continuous Professional Development Programs (CPDs)

The world at large keeps evolving, so are the specific practices and procedures in the field of information and library management. The most significant causative factor responsible for most of these changes is ICT and related technologies. In the words of Crawford (2003), ICTs and its applications has been changing the operations of most libraries especially those in academia in very obvious ways. These changes have left libraries and librarians with no other option but to
restructure and redefine services they render to their clientele. For the librarian to continually be relevant in the mist of this wind of change, it has become imperative that they take practical and prudent steps to keep themselves abreast with new trends and standards of providing information to users. Acquiring new skills and knowledge will enable the librarian to display high levels of flexibility and adaptive to change. According to Simmonds (2003), the qualification a person acquires be it vocational, academic or technical, has a maximum lifespan of five years. Therefore, for any professional to stay relevant, there is the need to embark on continuous professional development programs. Professional development improves on professional competencies, personal competencies and in extension, improves organizational outputs.

In the light of this, the respondents of the study were asked to state the effectiveness of continuing professional development programs. It was found out that 16 (59.3%) of the respondents stated that it was effective whiles 6 (22.2%) indicated that it was very effective. This show that majority of the respondents attested to the importance of continuous professional development towards their work. In Ghana for instance, the library association organizes regular workshops and seminars for its members in order to sharpen their skills and knowledge. These programs go a long way to influence the effectiveness of academic librarians in satisfying the information needs of their clientele.

5.12 ASCERTAINING TRAINING NEEDS OF ACADEMIC LIBRARIANS

It is very paramount for libraries to ensure that their staffs are always abreast with the latest skills needed to satisfy users of the library. As a result, libraries must have a robust and effective system of determining the training needs of librarians. These systems when put in place, will ensure that librarians always are up-to-date with requisite skills and knowledge required of the 21st century librarian. To find out how the training needs of the respondents are determined by
their parent organizations, an open-ended question was asked to solicit the views of the respondents. The following were the responses of the participants of the study:

1. Through observation
2. By having meetings with the staff to determine their training needs
3. By holding conferences for the staff
4. By assessing the staff.

A critical analysis of the findings suggests that most of the libraries do not have an established system of identifying and satisfying the training needs of their staff. This situation does not augur well for the librarians and the services they offer. Some of the respondents of the study indicated that they mostly go about their training on their own. They look for training opportunities by themselves and take advantage of them. Academic Libraries must therefore make conscious attempts at making the training needs of their staff their priorities. A library with a very competent staff will deliver excellent services to users of the library and user expectation of such library will always be high.

**5.13 NEED TO DEVELOP COMPETENCIES**

This section of the study sought to gather the opinions of the respondents of the study on the need for academic librarians to develop core competencies. All the respondents (100%) agreed that academic librarians must develop core competencies to support their work. They stated the following as some of the reasons why academic librarians must develop core competencies:

1. To help improve service delivery
2. It will help satisfy the needs of users of the libraries
3. It helps librarians stay updated with current trends on the issue of scholarly communication

4. Developing core competencies is vital to the scholarly communication process.
CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter presents a summary of the findings of the study in line with the objectives, and conclusion based on the findings. Recommendations have also been made based on the findings as well as suggestions for areas for further research.

6.2 SUMMARY OF FINDINGS OF THE STUDY

In analyzing the contributions of academic librarians play in the process of academic research, it was discovered that librarians play many roles. Some of the roles were contemporary as well as traditional in nature. Among the roles which were discovered by the study, increasing access to information of various formats to researchers and students emerged as the highest responsibility of academic librarians. Promoting information literacy was also seen as the role which enables researchers to effectively locate, evaluate and use information within the confines of ethical frameworks. Management of institutional repositories was also discovered to be a very important role performed by the respondents of the study. Institutional repositories basically store intellectual outputs produced by members of an institution. Again, marketing and publicity of information resources was also found to be a role which academic librarians involved in the study carry out a lot. Marketing allows academic librarians to bring to the notice of library users, new materials and services which they can use. In other words, it increases the visibility of library materials and services. Ensuring compliance with various copyright regulations was also an important role academic librarians perform.

Other roles which librarians perform to support the research process which were fairly supported by the respondents include; digital curation and preservation management, research data
management, promotion of open access scholarship and the promotion of personal information management.

On the contrary, some contemporary roles which academic librarians perform to support the research process which were not supported by the respondents of the study included; digitization, virtual research management, alert and tagging services, networking and collaboration and literature gap analysis.

The study also ascertained the level of knowledge and understanding of academic librarians in various private universities concerning academic publishing practices. The study revealed that when it comes to issues and practices comprising knowledge of commercial and open access publishing, offering editorial services, knowledge of various standards such as ISBN, ISSN, DOI etc., majority of the respondents have intermediate level knowledge about them. On the other hand, the study discovered that issues such as funder mandates and requirements, metadata standards and recovery tools, licensing issues pertaining to open access, data curation and preservation practices, and managing open access publishing software also had majority of the respondents having basic level knowledge about them. Advanced level knowledge concerning the practices raised under academic publishing services was recorded among very few of the respondents of the study.

The study further sought to ascertain the knowledge that academic librarians have about the management of open access repositories. The major areas of the management of open access repositories which were discovered by the study included knowledge of open access policies and requirements, repository software, metadata standards and recovery tools, data formats, database design, data management and data manipulation tools, data curation and preservation practices,
copyright and licensing issues pertaining to scholarly communication, managing repository platforms and update software and liaising with publishers on issues such as archiving policies. The study revealed that majority of the respondents have intermediate level knowledge in the major practices raised under management of open access repositories. The result was however different with copyright and licensing issues pertaining to scholarly content. Majority of the respondents indicated that they have advanced level knowledge in ensuring copyright compliance and other licensing issues.

The knowledge of academic librarians on the assessment of scholarly resources and impact metrics was also determined. It was discovered that majority of the respondents had advanced knowledge in the assessment criteria for journals and other resources, institutional assessment of scholarly output, providing support to faculty in assessing scholarly resources as well as providing advice to library acquisition departments on quality indicators. It was however discovered that the respondents of the study do not have appreciable knowledge in the practice of bibliometrics and altmetrics.

Furthermore, the study established that, with regard to the knowledge the academic librarians have on institutional repository management, majority of the respondents have intermediate knowledge on the following practices; ability to apply publisher policies on archiving and ability to apply metadata schemata whiles practices such as ability to collect, store and preserve institutional intellectual output, knowledge of repository solutions and reporting statistics in support of outreach and education also recorded majority of respondents having advanced knowledge.
Moreover, the study found out that, in offering copyright services to patrons of their libraries, majority of the respondents of the study demonstrated advanced level knowledge in practices such as; knowledge of pertinent national copyright laws, understanding of author rights and knowledge of campus copyright policies. Other areas of copyright services including demonstration of knowledge of orphan works, performing licensing services, and handling of permission requests had majority of respondents demonstrating an intermediate level knowledge about them.

Also, the study sought to determine the knowledge of the respondents on research data management practices. It was discovered that majority of the respondents had intermediate knowledge in the major areas of research data management including; data management and planning, open source and hosted data repository solutions, performing licensing services, handling permission requests and data description and storage. However, with regard to knowledge of campus copyright policies majority of the respondents demonstrated advanced level knowledge.

The study further revealed other personal skills which the respondents of the study possessed. These include; collaboration, communication skills (oral and written), enthusiasm, adaptation to change, personable and generalist. It was found that, majority of the respondents of the study demonstrated a rating of ‘very strong’ in the identified personal skills.

The study also sought to identify the modes of training which the libraries involved in the study use to train their staff on areas such as institutional repository management, open access management, academic publishing services, copyright services assessment and impact metrics and the management of research data. With regard to institutional repository management, it was
discovered that librarians receive their training through the use of formal education, on-the-job training and attendance of continuous professional development programs. On the issue of open access management, it was also discovered that majority of the respondents receive their training through formal education. Others also acquire their training through the use of on-the-job training, self-directed learning, and attending continuous professional development programmes. Also, it was revealed that in the area of publishing services, majority of the respondents receive their training through formal education while the others also receive theirs through on-the-job training, self-directed learning and attending CPDs. Majority of the respondents of the study were also found to receive their training in copyright services through formal education, while others also received theirs through on-the-job training and by attending CPDs. Again, majority of the respondents indicated that they receive their training on impact and assessment metrics through formal education while the others received theirs through on-the-job training, self-directed learning and attendance of CPDs. In the management of research data, it was also discovered that majority of the respondents received their training through formal education while others also received theirs through on-the-job training, self-directed, and attendance of continuous professional development programmes.

The study also identified some modes of training which academic librarians use. The modes identified were formal education, on-the-job training, self-directed learning and attending CPDs. The level of effectiveness of the methods identified was determined. Majority of the respondents of the study described formal education and on-the-job training as being very effective methods of training.

The study again found that, in ascertaining the training needs of academic librarians, the academic libraries involved in the study employed measures such as; observation, holding
conferences for staff, assessment of staff and also having meetings with the staff to determine their training needs. Among other reasons, it was discovered that academic librarians developing core competencies is necessary to improve service delivery, satisfy the needs of library users, help librarians update themselves on the current trends with regard to issues of scholarly communication.

6.3 CONCLUSION

The study explored the competencies of academic librarians towards scholarly communication. The process of conducting research has changed dramatically over the past few decades and this has been attributed to the introduction of ICT and other related technologies. Librarians are no more just custodians of information, they are now a key part of the information generating process. This relatively new role of the librarian comes with new and improved skills and competencies which must be acquired. This new role of the librarian also comes with new challenges which must be surmounted in order to adequately serve and satisfy the information needs of researchers, faculty, and students alike.

In view of this, academic librarians of the various private universities must recognize and commit themselves to ensuring that they develop the required core competencies needed to adequately support the scholarly communication process. The findings of the study showed that there is room for improvement for librarians to still develop competencies in some critical areas of scholarly communication. This will go a long way to strategically position libraries to contribute meaningfully to the research process and scholarship as a whole.

6.4 RECOMMENDATIONS

The following recommendations were made based on the findings of the study:
6.4.1 Formation of Unions

Academic librarians of the various Private Universities must form a very interactive and collaborative front which will enable them to exchange ideas and expertise on the various areas of scholarly communication. This will help libraries and librarians who may fall short in some practices or skills needed to adequately support the research process.

6.4.2 Advocacy and Education

Also, there must be intense advocacy and education about the need to develop core competencies to support scholarly communication. The appropriate skill set needed to support scholarly communication in the 21st century requires very specialized and technical training and education. Information and Library Schools must therefore develop critical curriculum to educate and equip information professionals with the requisite skills set needed to accomplish such tasks. In order for the development of this education to be successful, there must be collaboration between library schools and other faculties and researchers in order to successfully anticipate the actual information and research needs so that the curriculum is developed with such needs in mind.

6.4.3 The Role of Library Associations

Closely linked to the above is that, various library associations and institutions must make it a point to incorporate scholarly communication into their training modules and workshops which they organize for their members as part of continuous professional development programs. This will also serve as an additional platform where academic librarians can learn and exchange ideas with regards to developing knowledge and skills in the major areas of scholarly communication.
6.4.4 Sustainable Needs Assessment

Moreover, academic libraries of Private Universities must establish a working and sustainable means of ascertaining the training needs of their staff. Trends and practices in the field of library and information science keeps changing at a very rapid pace. For librarians and other information professionals to stay updated with these changes and become relevant, there is the need for them to continually review their training needs in order to determine the areas which need to be improved upon and those that do not.

6.4.5 Reinvention

Again, since the field of librarianship is an evolving one, academic librarians in particular must continually seek avenues to upgrade themselves not only in traditional library areas but also other areas of study (e.g. Information Technology), whose principles are being adopted by librarianship. This will enable academic librarians to be all rounded professionals who are well prepared to carry the task of information provision.

6.4.6 Establishment of Scholarly Communication Units

Academic libraries of the various universities must also consider setting up scholarly communication units/departments. The field of scholarly communication is a specialized field therefore setting up special units and putting duly qualified librarians in charge will enhance the effectiveness in the performance of services associated with scholarly communication. This will go a long way in ensuring that the library contributes meaningfully to the research process.
BIBLIOGRAPHY


IFLA. (2004). Limitations and expectations to Copyright and neighbouring rights in the digital environment: An international library perspective. IFLA.


Shampa, P., & Sashi, P. S. (2014). Digitization initiatives and special libraries in India. The Electronic Library, 32(2), 221-238.

Shearer, K., & Birdsall, B. (2002). The transition of scholarly communications in Canada. Retrieved from pdfs.semanticscholar.org


APPENDIX A: QUESTIONNAIRE

Topic: Skills and Competencies for Scholarly Communication

I am an MPHIL student of the Department of Information Studies University of Ghana, Legon. This study is being conducted across selected Private Universities in Ghana to seek the views of professional librarians on the topic “Skills and Competencies for Scholarly Communication”.

Please note that completion is anonymous and voluntary. The data will not be retained once the study is completed.

1. Please indicate the name of your Library and Address

........................................................................................................................................................................

........................................................................................................................................................................

2. Librarians’ role in academic research

The following are some of the roles of academic librarians in supporting scholarly research. Please rank the following roles using a rating scale of 1 – 5 where

1 means strongly agree
2 means agree
3 means neutral
4 means disagree
5 means strongly disagree

<table>
<thead>
<tr>
<th>Librarians Roles</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Increase access to information</td>
<td></td>
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<tr>
<td>Promote information literacy</td>
<td></td>
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<tr>
<td>Digitization</td>
<td></td>
</tr>
<tr>
<td>Virtual research environment management</td>
<td></td>
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<tr>
<td>Institutional repository management</td>
<td></td>
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<tr>
<td>Digital curation and preservation management</td>
<td></td>
</tr>
</tbody>
</table>

University of Ghana http://ugspace.ug.edu.gh
3. **Librarians’ knowledge and understanding of scholarly publishing services**

Indicate the level of understanding and knowledge you have about scholarly publishing services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None

<table>
<thead>
<tr>
<th>Scholarly Publishing Services</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Commercial and open access publishing platforms</td>
<td></td>
</tr>
<tr>
<td>Editorial services</td>
<td></td>
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<tr>
<td>Standards (DOI, ISSN, ISBN etc)</td>
<td></td>
</tr>
<tr>
<td>Funder mandates and requirements</td>
<td></td>
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<tr>
<td>Metadata standards and recovery tools</td>
<td></td>
</tr>
<tr>
<td>Licensing issues pertaining to Open Access</td>
<td></td>
</tr>
<tr>
<td>Data curation preservation practices</td>
<td></td>
</tr>
<tr>
<td>Manage Open Access publishing software services</td>
<td></td>
</tr>
</tbody>
</table>

4. **Librarians’ Knowledge of Open Access Repository**

Indicate the level of understanding and knowledge you have about open access repository services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None

<table>
<thead>
<tr>
<th>Open Access Repository</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Open access policies and requirements</td>
<td></td>
</tr>
<tr>
<td>Repository software, metadata standards and discovery tools</td>
<td></td>
</tr>
<tr>
<td>Data formats, database design, data management, data manipulation tools</td>
<td></td>
</tr>
<tr>
<td>Data curation and preservation practices</td>
<td></td>
</tr>
<tr>
<td>Copyright and licensing issues pertaining to scholarly content</td>
<td></td>
</tr>
<tr>
<td>Manage repository platform and update software</td>
<td></td>
</tr>
<tr>
<td>Liaise with publishers on issues such as archiving policies</td>
<td></td>
</tr>
</tbody>
</table>

5. **Librarians’ knowledge of assessment of scholarly resources and impact metrics**

Indicate the level of understanding and knowledge you have about assessment of scholarly resources and impact metrics services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None

<table>
<thead>
<tr>
<th>Assessment and impact metrics</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Assessment criteria for journals and other resources</td>
<td></td>
</tr>
<tr>
<td>Bibliometrics and altmetrics theory and practice</td>
<td></td>
</tr>
<tr>
<td>Institutional assessment of scholarly output</td>
<td></td>
</tr>
<tr>
<td>Provision of support to faculty in assessing scholarly resources</td>
<td></td>
</tr>
<tr>
<td>Provision of advice to library acquisition department on quality indicators</td>
<td></td>
</tr>
</tbody>
</table>
6. **Librarians’ knowledge of institutional repository management**

Indicate the level of understanding and knowledge you have about institutional repository management services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None

<table>
<thead>
<tr>
<th>Institutional repository management</th>
<th>Rating 1</th>
<th>Rating 2</th>
<th>Rating 3</th>
<th>Rating 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to apply publisher policies on archiving</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to apply metadata schemata</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to collect, store and preserve institutional intellectual output.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of repository solutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to develop policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reporting statistics in support of outreach and education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. **Librarians’ knowledge of copyright services**

Indicate the level of understanding and knowledge you have about copyright services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None
8. **Librarians’ knowledge of data management services**

Indicate the level of understanding and knowledge you have about data management services. Please rank using a scale of 1 – 4 where:

1 – Basic
2 – Intermediate
3 – Advanced
4 – None

<table>
<thead>
<tr>
<th>Data management services</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data description and storage</td>
<td>1</td>
</tr>
<tr>
<td>Data management planning</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge of open source and hosted data repository solutions</td>
<td>3</td>
</tr>
<tr>
<td>Performing licensing services</td>
<td>4</td>
</tr>
<tr>
<td>Handling permission requests</td>
<td>1</td>
</tr>
<tr>
<td>Campus copyright policies</td>
<td>2</td>
</tr>
</tbody>
</table>

9. **Librarians’ personal skills**

Indicate the level of your personal skills. Please rank using a scale of 1 – 4 where:

1 – Very strong
2 – Strong
3 – Good
4 – Weak
5 - None

<table>
<thead>
<tr>
<th>Personal skills</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
</tr>
<tr>
<td>Communication skills (oral and written)</td>
<td></td>
</tr>
<tr>
<td>Enthusiasm/ ambition</td>
<td></td>
</tr>
<tr>
<td>Adaptable to change</td>
<td></td>
</tr>
<tr>
<td>Personable</td>
<td></td>
</tr>
<tr>
<td>Generalist</td>
<td></td>
</tr>
<tr>
<td>Others (please indicate below)</td>
<td></td>
</tr>
</tbody>
</table>

10. In what ways does the library train its staff to acquire the necessary skills and competencies needed to adequately support scholarly communication? Please tick (✓) as applicable

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Methods of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Formal Education</td>
</tr>
<tr>
<td>Institutional repository management</td>
<td></td>
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<tr>
<td>Open access management</td>
<td></td>
</tr>
<tr>
<td>Publishing services</td>
<td></td>
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<tr>
<td>Copyright services</td>
<td></td>
</tr>
<tr>
<td>Assessment and impact metrics</td>
<td></td>
</tr>
<tr>
<td>Managing research data</td>
<td></td>
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<tr>
<td>Other methods of training (please specify)</td>
<td></td>
</tr>
</tbody>
</table>

Other methods of training (please specify)…………………………………………………………………………………………………………
11. What is the level of effectiveness of the methods listed above? Please rank using the scale of rating below:

1 – Very effective
2 – Effective
3 – Neutral
4 – Not effective
5 – Not applicable

<table>
<thead>
<tr>
<th>Method of training</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal education</td>
<td></td>
</tr>
<tr>
<td>On the job training</td>
<td></td>
</tr>
<tr>
<td>Self – directed learning</td>
<td></td>
</tr>
<tr>
<td>Attending CPDs</td>
<td></td>
</tr>
</tbody>
</table>

12. How does your library ascertain the training needs of librarians?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

13. In your opinion, do you think librarians need to develop core competencies in order to support scholarly communication?

a) yes............. b) no.............

13b) Explain your choice above
14. Please provide any relevant information on competencies for scholarly communication.

THANK YOU
The Dean
School of Graduate Studies
University of Ghana
Legon

Dear Sir/Madam,

INTRODUCTORY LETTER

I write to introduce to you Mr. Andy Adu-Sarbeng, an M. Phil student of the Department of Information Studies, University of Ghana, Legon.

He is researching on the topic “Assessment of skills and competencies for scholarly communications: A case of private Universities in the Greater Accra Region of Ghana”.

Please assist him with the necessary information that will be needed to undertake the research.

Thank you.

Yours faithfully,

Dr. Emmanuel Adjei
Head of Department

COLLEGE OF EDUCATION

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